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Railway Age

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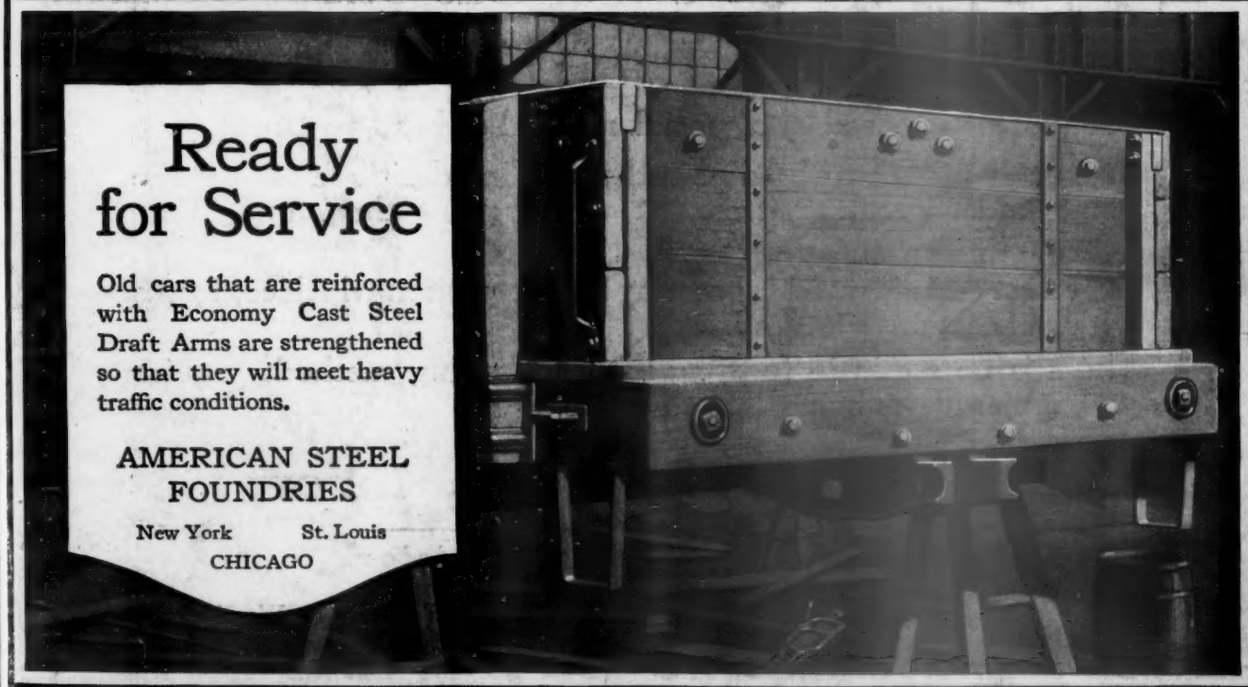
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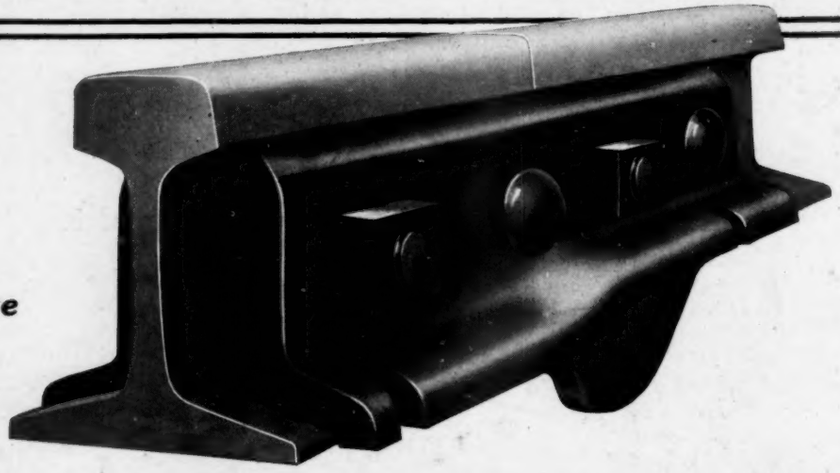

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EDITORIAL

Railway Age

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More Business Than Last Year

In the operating statistics of large steam roads for August—those having annual operating revenues above $25,000,000—shown in last week's *Railway Age*, only three roads handled more net ton-miles of freight than in August last year. These roads are the Chicago, Rock Island & Pacific, the Long Island and the Gulf, Colorado & Santa Fe. The Rock Island in August this year handled 833,384,000 net ton-miles of freight, revenue and non-revenue, as compared with 789,196,000 in August, 1920. Naturally with this increased business, there has been a pronounced betterment in earnings. The road in August, 1921, had a net railway operating income of $2,365,961. For the first eight months of 1921 the net railway operating income was $8,690,907, as compared with a deficit in the first eight months of 1920 of $2,390,599. For purposes of comparison, it may be noted that the standard return, based on the three years ending June 30, 1917, was $14,912,379. The increased traffic has enabled the road to make some interesting improvements in its operating statistics. The net tons per train in August, 1921, were 550 as compared with 536 in August, 1920, or 505 for the full year 1920. The car load of 26.4 tons in August this year compared with 25 in August of last year and 24.5 for all of 1920. The miles per car per day were 29.4 as compared with 30.5 in August, 1920, and 26.6 for the entire year. We are informed that the Rock Island has been favored with a considerably improved morale in recent months. It is apparent, on the whole, that the showing it is making is another of the many reasons for feeling optimistic about what future months are going to bring forth.

The Railroads Can Help

One important recommendation made by the Transportation Committee of the Unemployment Conference recently held in Washington was that the conference "urge upon the public the policy of immediate general buying as a patriotic duty," the idea being that as long as there is a buyers' strike, from whatever cause, there can be no general resumption of business and alleviation of unemployment. The railroads themselves, being one of the largest buyers of equipment and supplies in the country, are convinced of the wisdom of this policy and are buying materials as fast as finances will permit. Orders for steel, machinery, building material, etc., are being placed and, other opinions to the contrary notwithstanding, the fact remains that the railroads are going out of their way to place orders and thus help improve general business conditions. For example, on October 4 the Delaware, Lackawana & Western issued a request for bids on approximately $200,000 worth of machine tools and accompanied this request with the following note: "We desire to state that we are not in immediate need of these machines, but if sufficiently attractive prices are quoted, we are ready to place orders and pay for same upon terms agreed upon, in the hope that it will help the general business and labor situation at this time." There is no evidence that the expression "sufficiently attractive prices" means anything more than the absence of war-time inflation and in fact the manufacturers were helped in every possible, practical way to ascertain the machine requirements and submit bids. Is not this an example of the kind of intelligent co-operation and readiness to help which, if followed by all railroads and all industries, will soon build up business, reduce unemployment and bring the country once more to a condition of normal prosperity?

Foreign Trade a Stabilizer

In England several of the larger railway lines make a practice of building their locomotives in their own shops. It has been argued that these roads should alter this practice so that a part of their requirements at least would be supplied by private builders. These domestic orders are needed by the private builders, it is said, to provide a nucleus which will assure a continuity of operation for them when foreign business is slack. The converse might be said to be true in this country, where the domestic market for railway equipment and supplies is the more important—that is to say, a foreign market should be maintained so that, even when domestic business is light, enough foreign orders are received to insure at least the continuity of operation so essential to the efficient conduct of a business. At a time, then, when the domestic market leaves much to be desired, it is an encouraging sign to see an American concern, the Baldwin Locomotive Works, secure an order for 85 locomotives from the Argentine State Railways. This is doubtless one of the largest single orders, domestic or foreign, which have been placed this year. Baldwin has studied the foreign field and knows how to meet its requirements. Aggressive activity in foreign markets and careful attention to orders when received, even when domestic business is booming, offers a very definite reward to manufacturers of railway equipment and supplies and the subject merits their careful attention.

Developing Branch Line Traffic

Somewhat over a decade ago there occurred a remarkable development of electric interurban lines. Many of the routes paralleled existing branches of steam roads and railroad managers, scanning the receipts from local trains running between the same points, predicted that the traffic would not be sufficient to make the operation of the electric roads profitable. But the interurban demonstrated that by establishing a regular schedule, with trains at frequent intervals, the passenger traffic could be increased greatly over that which the steam railroad secured with its few daily trains. At the present time a similar situation exists, but the competitor now is the motor bus. It is time for railroad officers to analyze the situation and decide whether they will passively allow an outside agency to step in and develop the potential traffic along their lines, or whether they will inaugurate rail motor car service and secure the business themselves. The railroad has several important advantages over busses operating even on improved roads. The grades and curves on the railroad are usually less severe than on the highways and the riding is notably smoother. Furthermore, the cost of upkeep of

vehicles running on rails is lower and heavier loads can be hauled with the same power. It seems that the only condition under which busses on the highways have a decided advantage is where the railroads are located some distance from the centers of population along the route.

Packing and Handling in Movies

In the attempt to interest shippers and employees in the importance of secure packing of goods and careful handling in transit, the New York Central has had prepared two reels of motion picture films which show in an interesting manner the lesson it is endeavoring to teach. The two reels make up a connected narrative and the audience is taken to various points on the New York Central lines where the results of improper packing and handling are shown, together with instances of unavoidable conditions, such as sudden stops, which make careful packing and stowing necessary. This picture should prove a decided success, because it brings home its lesson in such an interesting way and without seeming to preach. The average railroad man or shipper can look at it with considerably more unforced interest than he does at some of the motion pictures which he pays to see. When the New York Central has shown the good results obtainable by this sort of venture, it is to be hoped that the idea will spread to other carriers, for there is ample opportunity for vast improvement in the matters touched upon in the picture.

An Incidental Saving

Discussion of the action of the feedwater heater is usually based on the effect of the device on the boiler alone. While this is the primary effect, the heater also influences to some extent the action of the cylinders. When the heater is in use about 12 per cent of the exhaust steam is diverted to it, thereby lessening the amount discharged from the exhaust nozzle and reducing the back pressure. This improves the efficiency of the cylinders. On the other hand, the reduction in the rate of combustion for a given rate of steam generation results in lower flue gas temperatures and lower superheat, which tends to decrease the cylinder efficiency. To ascertain the effect of each of these modifications on the action of the engine, tests were recently conducted with the injector and with the feedwater heater under identical conditions of speed and cut-off. The indicator cards taken on these tests showed that the reduction of back pressure due to the heater increased the power of the cylinders from three to six per cent, depending on the speed. This increase in power was accompanied by a decrease of about 22 deg. in the superheat which would increase the steam consumption per horsepower two per cent. The net effect, therefore, is to increase the power obtained from a given weight of steam about four per cent. This gain in the overall efficiency of the cylinders is in addition to the direct effect of the heater on the boiler.

The Passing of Bessemer Rail

One interesting commentary on the recent reduction in the price of rails is to be found in the fact that Judge Gary's statement mentions but a single figure as the selling price for "standard rails." In other words, Bessemer rail has become such a small factor in the rail market that it is not worth while to state a separate figure for it and the term "standard rail" as used by Judge Gary is to be understood to designate only open-hearth rail. While most of the manufacturers are in a position to roll the Bessemer product if it is desired, only a few of them have rolled it recently. Of the 2,604,116 tons of rail rolled in 1920, only 142,899 tons, or 5.5 per cent, was Bessemer rail as compared with practically 100 per cent in 1899. When it is considered that in 1920 nearly 500,000 tons of rails were rolled in sections weighing less than 45 lb., it is safe to assume that a very large proportion of the 1920 Bessemer tonnage was utilized for industrial purposes and very little of it was applied to standard railway requirements. Thus, the tendency of the times clearly indicates that the Bessemer rail will soon be as rare as iron and will, therefore, concern the railway officer only in connection with relayers and scrap. This is the answer to those who, during stress of war conditions, sought to force the railroads to return to the use of Bessemer steel.

New Rail Price Brings Out Orders

No better illustration of the wholesome effect of price readjustment is to be had than that noted with the recent cut in the price of standard rails from $47 to $40. This reduction in prices was announced by Judge E. H. Gary on October 25 with the statement that it applied alike on new orders and all tonnages due on unfilled orders, and had the immediate effect of releasing requisitions for 100,000 tons of rail. This statement is not made without a due regard for the fact that a number of inquiries for rail were made before the price cut was announced, nor does it overlook the increased interest in the market for track spikes, bolts and other fastenings observed in recent weeks. However, the announcement of the cut served to bring out a number of definite orders and others are expected shortly. This renewed interest in this country, coming simultaneously with orders by the Canadian roads for 87,000 tons of rail, has given the rail industry a genuine impetus. Another development which points to a restored demand for this important requisite to good railway track is the recent announcement of the Inland Steel Company of its decision to enter the field of rail manufacture in March, 1922. Aside from the increased capacity thus afforded, the potential competition involved should have a wholesome effect.

Wanted—Better Labor Leaders

Prof William Starr Myers of Princeton is reported in the newspapers to have made the statement that a railroad strike, sooner or later, is inevitable because union heads want the government to take over the lines. In his opinion, however, the threatened strike would have failed in two or three days because "no strike was ever won when the public was opposed to it. The strike," he said, "would have brought about the emancipation of American labor itself, for labor would then choose new and responsible leaders." There are many who believe that with the failure of great railroad strikes in Great Britain and France and with the calling off of the proposed strike in this country, the day of extensive railroad strikes has passed. After all, the public is the principal sufferer from such strikes. Recent years have brought it to a full realization of this and it will not tolerate tying up of the traffic in the future. It is undoubtedly true that some of the labor leaders have deliberately used every means within their power to discredit the railroads and weaken them to a point where government ownership would be imperative. It ought not to require a strike, however, to bring about a change of attitude on the part of these leaders. Undoubtedly they have already seen the handwriting on the wall. The great mass of railroad workers in this country are far too intelligent and sensible to stand much longer for this sort of

leadership. Moreover, if the railroad executives will further exert themselves to bring about the right sort of understandings with the men this question of false leadership will be settled in a hurry. "Whom the gods would destroy, they first make mad." The action of some of the labor leaders at the recent conferences in Chicago would indicate that they are in a fair way to destruction.

Railroads and National Progress

During the first decade of the last century an eminent American statesman predicted that not until 300 years had elapsed would this entire country be settled. Yet, after little more than a century, a growth has taken place in population and economic power which puts to shame many of the countries of Europe. The obvious cause for a great part of this improvement is the enthusiasm shown by the people up to the last decade in the development and expansion of the railroads. Something more definite, however, regarding the influence of the railroads on our economic development is given by Dr. J. M. Goldstein in an article appearing elsewhere in this issue. There it is shown in what striking fashion population and production have followed railroad expansion and how such improvement has been the most pronounced where and when railroad construction was greatest. Dr. Goldstein is a Russian who has served as an economic adviser to various branches of his government. He was attached to Kerensky's railway mission to this country. Coming as he does from a country where the policy toward railway expansion has been the antithesis of ours and where failure to recognize the importance of modern methods of transportation caused the defeat at arms, the triumph of the Bolsheviki and economic disaster, Dr. Goldstein is in a position to appreciate wherein lies the economic strength of the United States. Consequently his conclusion—that the practical cessation of railroad extension in this country during recent years is a matter worthy of considerable concern—is, to say the least, thought provoking.

A Fundamental Weakness of the Transportation Act

THE WAY IN WHICH the strike of the train service employees was prevented forcibly calls attention to a vital weakness of the Transportation Act. It was plain the labor leaders were desperately afraid of the outcome of a strike. They wanted some assurance or concession from the Labor Board or the railways which they could tell their members afforded the basis of "a satisfactory settlement." The railways gave public assurance that they would not make any further reductions of wages except under an award from the Labor Board. This is being mentioned as one of the bases of a settlement, but it doesn't mean anything. Everybody directly concerned knew the railways intended to make no further reductions of wages not authorized by the board.

The thing that really afforded the labor leaders a substantial basis for announcing "a satisfactory settlement" was a statement made by the Labor Board to both the railway executives and the labor leaders. Apparently this statement subsequently was interpreted and amplified by Ben W. Hooper, one of the public members, in a conference with the labor leaders. This statement was, in effect, that the board had pending before it many cases involving rules and working conditions; that it intended to hear and dispose of these cases as to each class of employees before it heard any case involving their wages; and that, therefore, it would necessarily be a long time before an award in any new case involving wages could be made. The board did not specifically mention any length of time that it thought would elapse before any new case involving wages would be settled. Newspaper reports credited Mr. Hooper with having mentioned nine or ten months, and even as much as a year, in his conference with the labor leaders. The board is best qualified to say what its statement meant. In view of the fact that it was largely because of it the labor leaders canceled the strike order there can be no doubt as to the interpretation they gave to it.

Acting, both of them, under provisions of the Transportation Act, the Interstate Commerce Commission regulates railway rates and the Labor Board railway wages. It is an open secret, or rather no secret at all, that the Commission has been subjected to heavy pressure by high officials in Washington to bring about reductions in rates. For the Commission to order substantial reductions of rates while railway labor and other costs continue as high as at present seems in direct disregard of the rate-making provisions of the Transportation Act and of the Constitutional prohibition of confiscation. The Commission in the recent grain rate case based its order for reductions of rates on the assumption that the operating expenses of the railways were to be substantially reduced. The largest part of their expenses is within the control of the Railroad Labor Board. The interpretation naturally placed by most people on the statement issued by the board in the strike negotiations is that it intends deliberately to block a further substantial reduction of wages for a long time.

If the administration and the Interstate Commerce Commission are going to persist in their efforts to reduce rates and the Railroad Labor Board is going to carry out a policy of long delaying reductions of wages, the railways will be presented with two very unpleasant alternatives. One will be to resist all future efforts to reduce rates, even to the extent of carrying the matter to the highest courts. The other will be to yield in the matter of rates, go on earning entirely inadequate net returns, and continue to postpone all rehabilitation and expansion of their properties. Acceptance of the latter alternative will ruin some railways, prevent an increase in purchases by all of them, and thereby help to protract the industrial depression. It will prevent the railways from getting ready to handle a large traffic when business revives and pave the way for congestions of traffic and car shortages which will cause the public heavy losses and exasperate public opinion.

The vital defect in the Transportation Act which this situation discloses is the utter want of relationship between the body that regulates the rates and the body that regulates the wages. No industry can function properly under a system of regulation which results in one body forcing its prices or rates down on the theory that its operating costs will be reduced and another body preventing reductions of its operating costs. The Transportation Act must be changed. The best policy that could be adopted would be to vest the regulation of rates and the regulation of wages and working conditions of the employees in the same body—preferably the Interstate Commerce Commission. If this is not to be done the regulation of wages and working conditions should be given to some body subordinate to the Interstate Commerce Commission. It is manifestly absurd to have two government regulating bodies working at cross purposes as the Commission and the Labor Board are now. If they persist in working at cross purposes as they are now, the results produced will be transferred from the domain of the absurd to that of the outrageous and disastrous.

Meantime there is only one course for the railways to follow. First, they must put to the test at the earliest possible time the question of how long the Labor Board really intends to postpone any further reduction of wages. Secondly, they should resist all efforts to bring about reductions in the rates which would continue to make them unreasonably

low in proportion to their present operating costs. The Interstate Commerce Commission and the Railroad Labor Board are both government bodies which represent the public. The public has no right, moral or legal, to insist through one government body that the railways shall maintain the present wages and through another that they shall make reductions in rates, which if present wages are to be maintained, will be disastrous to the railways financially and render them incapable of putting their properties in shape to handle the larger traffic that is bound to come.

Doubtless if the railways resist to the limit all general reductions of rates while present wages are maintained they will arouse a hostile public sentiment. That will be unfortunate. If, however, by yielding now to utterly unreasonable demands from the government and the public, they temporarily placate public sentiment, they will be doing the very thing which is best adapted to raise against them later an overwhelming public sentiment. In other words, they will be doing the thing best adapted to render them unable to handle the commerce of the country when business revives, and all the most serious outbursts of public sentiment against railways in the past have been caused by acute traffic congestions and huge car shortages.

Ever since the present rates were fixed reductions in them have been made to correct unfair discriminations or to remove rates which really were so excessive that they interfered with the movement of traffic. Such changes should and will be continued. On the other hand there should be no yielding to the outcry for general reductions in rates unless there are to be made simultaneously corresponding reductions in labor costs.

The Superpower Survey

A BRIEF ABSTRACT of that part of the so-called superpower survey report which deals with electrification of heavy-traction railroads is published elsewhere in this issue. The purpose of the survey is unquestionably a good one. By consolidating the power supply in the large districts in question, power could be produced and delivered at a lower cost than is now possible, a much better load factor could be obtained, less coal would have to be moved and a number of other savings could be made. It is unfortunate that those who prepared the report should in their enthusiasm show a spirit of partisanship.

For example, it is assumed in the report that 7.5 lb. of coal are required by a steam locomotive to do work at the rim of the drivers equal to one kilowatt hour. A value of 7.56 lb. was obtained by tests made on the C. M. & St. P. in 1910 on locomotives not equipped with fuel saving devices. Even if the value of 7.5 lb. is correct for the average steam locomotive now operating in the zone in question, it will not be true of steam locomotives in operation in 1925 or 1930, at which time it is proposed to have the superpower system in operation.

The report states: "The inherent wastefulness of the steam locomotive is proved by its own advocates in their claim that 40 per cent of the coal can be saved by the careful use of these auxiliary devices. Then why be skeptical of a saving of 60 per cent by a modern power station, which has all the devices in greater completeness and, in addition, has brains to use them?" Perhaps, as suggested, a saving of 60 per cent can be effected by a power plant, but why call it 60 per cent if steam locomotives can be improved in such a fashion as to save 40 per cent? The only really important economy device applied to power plants that has not been applied to locomotives is the condenser, and power line transmission losses have no bearing on the steam locomotives.

The report also states that no more skill is required to operate an electric locomotive than is demanded of an ordinary chauffeur. The railroad man who has taken a long freight train over a grade will be afforded a smile when he reads this.

A steam locomotive equipped with economy devices is spoken of in the report as a "full-jeweled movement." It is true that many enginemen speak of the devices applied to steam locomotives as jewelry, but to use the expression "full-jewelled movement" in a report of this character savors of partisanship.

Unfortunately, because of such statements, the data presented must be accepted with reservations. The use of electric traction is practically certain to develop rapidly during the next decade in the district in question. Much of the data presented in the report will be valuable to those roads considering electrification; but in using the report as a guide it would appear that it must be done with discretion.

Have Railway Managers Become Mere "Lobbyists?"

THE COLUMNS of a railway paper should be open to criticisms of railway management if they evidently are intended to improve the transportation situation and are made by persons who really know something about the railroad business. It is for this reason that we publish elsewhere an article by George N. Brown in which he makes severe and rather sweeping criticisms of the attitude and conduct of railway officers within recent years. Mr. Brown was for some time chief examiner of the Interstate Commerce Commission. In that capacity he dealt with many railway officers in Washington, and also came in contact with them while conducting hearings in important rate cases throughout the country.

Mr. Brown criticises the higher railway officers because, as he charges, they spend too much time in Washington trying to get favors from Congress and the Interstate Commerce Commission, when they ought to be at home administering the properties in their charge. He says that "the managing heads have lost their initiative"; that "they are not and have not been engaged in railroad business" but "have become expert lobbyists and put in their time seeking concessions from constituted authorities."

To a large part of Mr. Brown's indictment the managing heads of the railways must plead guilty. They are even more painfully conscious than he is that for years they have been spending more and more of their time in conferences and hearings relative to regulation and less and less of it in struggling with the problems of actual railroad development and operation. They must also plead guilty to the charge that they are exercising much less initiative regarding railroad management in all its phases than they or their predecessors formerly did. They must agree that all this is very bad for the railways and worse for the public.

While the railway managers cannot, however, evade a substantial part of the responsibility for these conditions, they cannot in fairness be held mainly responsible for them or their results. For years railway heads have opposed increases in government regulations on the very grounds, among others, that they would transfer from the managers to public authorities a large part of the authority which should reside in and be exercised by the managers of every business, and that if this were done the managers, instead of being able freely to exercise their initiative, would perforce become largely lobbyists and expert witnesses.

Almost every extension of government regulation which the railway managers have opposed has been made. Regulating bodies today fix the rates they may charge and the wages and working conditions of their employees; are empowered to

dictate in periods of emergency the operation of their terminals, locomotives and cars; tell them how many men they must have in a train crew, and so on ad infinitum.

The unavoidable result has been that the functions of the railway managers have been changed. Prior to about eleven years ago railway managers could and did stay at home, as Mr. Brown suggests, and direct the development and operation of the properties, the making of their rates and the work of their employees, as the managers of any other business can. The most important result of the increase in government regulation has been that no matter how well a railway manager may perform those functions which he has been left free to exercise, his railway may be entirely deprived of all the fruits of his efforts by the regulation to which it is subjected. Consequently it has become imperative that the heads of the railways, either personally or through other appropriate officers, shall devote a very large part of their time and energy to conferences with each other and to what Mr. Brown calls "lobbying" with public authorities regarding the great and vital problems of regulation.

Mr. Brown is right in saying the situation is most unfortunate. It is impossible, however, to agree with him as to the cause or the remedy The main cause is unfair and excessive regulation, and the only remedy is to remove the cause. He says "continued waiting about Washington for government favors can lead to but one thing, and that is government ownership and control." This, he believes, "would end in disaster and would be destructive of all advancement in our transportation facilities." He is undoubtedly right in this. But the danger of government ownership is not due to railway managers hanging around Washington. It is due to a system of regulation which makes it necessary for them to hang around Washington. Railway managers have no more desire than other business men to hang around Washington. There is no atmosphere on earth that is so distasteful to most of them as that of Washington and no place they would so gladly stay away from.

We all know what the government has done to the railways within the last ten years in spite of the fact that their high officers spend so much time in Washington as to call forth Mr. Brown's protest. God only knows what the government would have done to them if the railway managers had gone to Washington less!

The Mechanical Convention

IT IS GOOD news to learn that Division V, Mechanical, American Railway Association, has decided, as announced in last week's *Railway Age,* to hold its convention next June with exhibits. Never were the problems confronting the mechanical departments of our railroads so serious and so complicated. It is a matter of vital necessity for the officers and other subordinates to get together and counsel about these problems at as early a date as practicable.

If the Mechanical Division is to stand on its own feet and merit approval of the American Railway Association and the higher executive officers, it must assert itself and do something more than drift at a time when every effort should be made to improve the efficiency of operation. It will be necessary to make some radical additions to the committee assignments. Time will not permit going into this in detail, but the *Railway Age* has already made extensive and detailed suggestions in special articles on this question in its issues of June 10, 1921, and August 20, 1921.

This much we may say, however, in the way of emphasis. President Smith of the New York Central made the statement at a hearing before the Interstate Commerce Committee of the Senate that "95 per cent of railroading is human." The mechanical department, more than any other department, is an employer of labor and yet, strange to say, this has hardly been recognized in its proceedings; nor have important questions of operation, in the discussion of which the mechanical department officers ought to participate. Why, for instance, is it not of just as much or of more importance that the mechanical department consider the economics of labor and the economics of operation as it is for the engineering officers to consider these questions? More than this, our great industries employing men of the same degree of skill as those employed in the mechanical department but with their entire forces concentrated in single plants find it necessary to give much thought and consideration to problems involving the human element in the operation of their plants. Is it not more important that the mechanical department, with large forces concentrated at some plants and smaller forces scattered over much territory should give even more thought and attention to these things? Truly the Mechanical Division has a big problem on its hands and now is the time, if ever, that these matters should be tackled intensively. The convention next year should be the largest and the most important in the history of the organization.

It is important that the meetings should be made as businesslike as possible and that nothing should be allowed to interfere with them. It is also advisable that they be attended by large numbers of the subordinate officers, for part of the time at least, in order that they may get some of the inspiration of the meetings and at the same time have an opportunity of visiting the exhibits. The wonderful educational effect of these exhibits is not generally understood. The latest improvements in mechanical equipment are shown and, generally speaking, the exhibits are in the hands of experts who can thoroughly explain the advantages and workings of the devices and at the same time answer questions or furnish information to those who may have used the devices and who may not have secured the best results because of misunderstandings as to the application or workings of the apparatus.

New Books

Wage Statistics Inquiries, November, 1921, *Edition.,* 38 *pages,* 6 *in. by* 9 *in. in size. Bound in paper. Published by the Railway Accounting Officers' Association,* 1116 *Woodward Building, Washington, D. C. Price* 10 *cents.*

This pamphlet has been compiled by the Railway Accounting Officers' Association in collaboration with the Bureau of Statistics of the Interstate Commerce Commission. It is intended as an assistance in the uniform interpretation and filling of the Commission's order for the compilation of wage statistics and embodies the principles of all interpretations or instructions issued in this connection by the Bureau of Statistics.

The Interstate Commerce Commission has prescribed the form of wage statistics that shall be reported to the Commission, these same statistics being also furnished to the Railroad Labor Board. The compilation of statistics of such a highly technical nature naturally involves questions of one sort or another. These questions are submitted to the Bureau of Statistics and the latter gives the carrier submitting the inquiry an interpretation on the specific point involved. This pamphlet is a compilation of these interpretations as given to the various carriers. In the pamphlet duplicate inquiries are eliminated as are also those portions of the inquiry or answer which are not essential to an understanding of the interpretation given. A complete index adds considerably to the book's value. The pamphlet is indispensable for a comprehensive understanding of the basis underlying the wage statistics. It will presumably have a large circulation among those interested in or concerned in the compilation, interpretation or application of such statistics.

Letters to the Editor

[*The* RAILWAY AGE *welcomes letters from its readers and especially those containing constructive suggestions for improvements in the railway field. Short letters—about* 250 *words—are particularly appreciated.*]

Watch for the Good

BREWSTER, Ohio.

TO THE EDITOR:

With the confidence born of the performance in the past, we have waited patiently for the *Railway Age* to analyze the operation of the D., T. & I. under the Ford regime, which was admirably done in the issue of September 10. Nearly all of the comments written, particularly by men of railroad experience, have carried an air of criticism and ridicule. In fact, some have gone so far as to be personally abusive. There is a lesson to be drawn from every calamity, famine or miracle, and it may be that a review of the occurrences on the D., T. & I. for the past six months will show some principles of practice that would be beneficial to all of the railroads.

The public should know what has actually transpired on Mr. Ford's railroad. Surely it has had sufficient publicity, and as has been correctly stated, no miracle has been performed. What has happened is that by shrewd business foresight Ford acquired the D., T. & I. as an adjunct to his manufacturing business, and has, by virtue of this combination, put the property on a paying basis, so that in place of the property being a notorious failure it is now a success. That should be one factor in his favor.

Why not review the situation with the thought of getting what good there is out of it? Ford, as a manufacturer and business man, is a success. His principle of standardization of practice has rewarded his efforts well, financially. Apparently, he has started the policy on the D., T. & I. of "More business in railroading, and less railroading in business," which, if applied systematically, should result in economy.

Standardization of materials used in railroad maintenance, both mechanical and way, is one of the fields where strides for economy are possible, but it is only by the approval and support of the executives that results can be obtained. The re-organization of the accounting system on the D., T. & I. as outlined in the *Railway Age,* is well worth studying, in particular on railroads where the distance to headquarters is not great. Duplication of accounting is not infrequent, and possibly the so-called "shop organization" may fit into railroad service to the benefit of all concerned.

The making of the station agent a "general manager" of his territory is a novel idea, and a good one. Review the conditions on many of the railroads and see if it is not true that many locations can be recalled where such a plan would save labor and money. Of course, there are many who will say the agents are not qualified. This condition, however, can be overcome.

By far the most important feature of the Ford organization at the present moment seems to be his "labor policies." Say what you will, the satisfied employee is an asset. Theorize as you may, the best employee is one satisfied with his wages and working conditions, and it is this condition that Ford has developed on the D., T. & I. Pay men well, so well in fact, that they cannot afford to lose their jobs, and we may feel assured of the results.

So, therefore, granting all that has been written as true about Ford and the D., T. & I., would it not be well to study the good points of his organization and standardization, and apply them, if by so doing we can bring about economies so necessary at this time? Give the man a chance, and if he wins we should all profit by his experience. If he does not, then only Ford loses.

JOHN SESSER.

Elimination of Rough Handling

GREENVILLE, Texas.

TO THE EDITOR:

The Interstate Commerce Commission defines rough handling as improper handling of cars in a train, or in switching. The figures given for damage to freight by the American Railway Association, Freight Claim Division, run into many millions of dollars each year, not taking into consideration damage to equipment, delays to freight and the additional per diem on cars.

Recently there has been a campaign started to reduce rough handling. The question is how badly do we want to reduce it. Plans and suggestions have been proposed that will not entirely eliminate rough handling but will materially decrease it. The idea has been advanced that we should reduce the speed of cars at point of impact while switching to two-and-one-half or three miles per hour. A great many practical trainmen and yardmen will agree at once that such a speed is impractical and that it is not possible to switch cars at a speed of two-and-one-half to three miles an hour without materially slowing down the switch movement. They invariably overlook the point that the handling speed and the speed at instant of impact are not the same. In some yards or leads it requires a switching speed of six or seven miles an hour to get a car home or at point of impact at two-and-one-half or three miles an hour. At other leads it only requires a speed of three miles an hour. In some gravity yards or humps only the slack is necessary to get the pin.

This question of switching speed should be worked out for each individual yard or lead. The only way that rough handling in yards—where 95 per cent of the rough handling occurs—can be eliminated will be by the conscientious and painstaking efforts of those handling equipment and constant and intelligent supervision.

There is nothing revolutionary in this but it will require courage, perseverance and continued efforts. It will to some extent, but not to any serious extent, slow up yard work, especially in flat yards; it will increase to some extent the cost of car handling, and will reduce the number of cars handled per engine hour. This will depend upon the physical characteristics of the yard and lead, and the personnel of the yard forces.

At a small yard where we handled from 30,000 to 35,000 cars a month, a campaign to educate the men was started in June. On a lead at one end of a flat yard which is practically level, and a classification track of approximately 3.47 of one per cent ascending grade, to get cars home at a distance of 420 ft. (ten car lengths or 15.25 rail lengths) at an impact of no greater speed than two miles per hour, required that they be turned loose on the lead at a speed of eight miles an hour, or one rail length in 2.75 seconds. The curvature in the turn-out and the ascending grade reduced the speed for each rail length the car rolled; as the distance increased the car slowed up to a speed of one rail length in nine seconds. This brought the speed down to approximately two-and-one-half miles per hour at point of impact.

I will not go into the details of making these tests, as the average engine foreman or switchman or engineer should be able to distinguish the speed at which he is handling cars after a thorough training by the proper supervising official. These instructions should cover a period of at least 15 days.

It is not the cannon that makes the loudest report that is

the most effective—the same applies to our yard operation. We may be able to handle an average of 20 to 25 cars per engine hour, probably reducing our operating expense one engine day; this will amount to about $60 per day, or $1,800 in 30 days. It will require switching the cars from five to 15 miles per hour and letting them strike at point of impact from five to ten miles per hour, thus damaging equipment and lading, which will require the cars to be transferred and placed on the rip track with consequent delay to traffic. By doing this we have saved $1,800 in operation, but have spent from $3,000 to $5,000 in claims and to repairs to cars on the rip track, to say nothing of the loss of business due to inability to move the cars on schedule time.

During the period that we were making this test in our yard we were able to handle from 18 to 22 cars per engine hour without any damage to equipment or lading. We entirely eliminated excessive speed at the point of impact.

B. J. BLAIR,
Yardmaster, M., K. & T.

Universities Need Co-operation From Railways

COLUMBUS, Ohio.

TO THE EDITOR:

The discussion now going on as to the worth of college graduates in the field of transportation would seem to indicate that the universities are not taking any active part in meeting the needs of the situation. The truth is that those universities which have a College of Commerce offer work in transportation as a matter of course. Such universities are Chicago, Yale, Leland Stanford, Illinois, Wisconsin, Harvard, and a host of others. The university which I attend is an example of the sort of thing which is being done. After two years of preliminary college work the student may take up the study of transportation and continue in that group for two more years, making a four-year course.

I am not taking the transportation group but I am this year electing a railway subject, railroad economics. Perhaps the eyes of some of the oldtime railroad men would open if they were to see the kind of work done in this course. No attempt is made in it to represent the railroads as an enemy of the public. The university library contains no end of literature upon the railway question, including bound copies of all the speeches of railway executives which have been given in the last 20 years. The next few paragraphs are taken from the university catalogue.

"The courses in Transportation and subjects closely related thereto which are offered in this group will be of value to those who will sometime occupy administrative posts in the railway business and who will be responsible both to railway investors and to the public. The work offered in Public Utilities is intended for those who will occupy positions with utility companies or serve in some capacity in the government regulation of utilities.

"The extreme specialization of a modern railway system makes it difficult for a young man entering this field to bridge the gap between mere routine work and positions of responsibility. There is an increasing number of positions in the traffic, finance and statistical departments of railway and steamship companies, but without previous knowledge of the system as a whole, one entering such work is unable to see much beyond his own department and to appreciate the organic relations between it and the other departments.

"Many difficult problems affecting rate making, the railway security market, and railway administration await solution. The extent to which these problems are solved will in a great measure depend upon the special training and breadth of mind of those who administer the railroads."

The required courses in this group, while concerned in the main with railroad matters, are expected to give an insight into businesses closely allied to the railway. A student may elect additional courses in subjects in which he is particularly interested. The required courses are as follows: Transportation Economics, Business Law, Corporation Economics, Principles of Accounting, Public Utilities, Traffic Management, Geography and Commerce of the United States, Public Utility Accounts and Statistics, Railway Accounts and Statistics, Marketing, Labor Legislation, Railway Organization and Finance, and Industrial Relations.

The universities need more co-operation from the railways. The young man does not want to be hampered by an ancient system of seniority. I have a chum who may be chief clerk in a small office in about 30 years. With such examples, coupled with those of family favoritism—I live in a small shop town where this is carried out—the young man is scarcely liable to seek railroad work.

OHIO STATE UNIVERSITY STUDENT.

In the Interest of Better Convention Programs

CHICAGO.

TO THE EDITOR:

In your review of the convention of the Roadmasters' Association, held at Chicago on September 20, 21 and 22, you commend the executive committee for suiting the program each year to "the particular need of the times" and you accord warm praise for the things that were done and said. This is all right, I guess; every editor must be an optimist, and it may be that I am unreasonably impatient; but how often it was necessary in the course of the roadmasters' discussion to note that the things left out were the matters of most importance! Are our technical associations like rivers in level countries, which wear their channels to a level and cease thereafter to manifest any power, except as it is transmitted to them by the perfunctory flowing of the tides?

Everybody was talking of the same old problems which have been, or ought to have been, put out of the way years ago; problems which are no nearer settlement than they were when they were discussed by the now forgotten New England Roadmasters' Association and the American Society of Railroad Superintendents when it was steered by Waterman Stone and Charles A. Hammond.

It seems to be difficult for the members to grasp the idea that "old times have changed, old manners gone"; that what is needed today is maintenance of track by contract and work done by power-operated tools; that the only rivalry among track forces is the rivalry among themselves for paid places in the union, and that a new rivalry in knowledge must be substituted, or we must go to smash.

As the meeting progressed I jotted down these *if's* (I crave the forgiveness of Kipling) which are, as it appeared to me, just what was not intended to be brought out.

If you can think, think, think, and keep thinking, on a problem, and not rush into it regardless of consequencess;

If you can say "No." with emphasis and "Yes," with good reason, regardless of what you know to be the questioner's own view;

If you are prepared to obey all reasonable commands;

If you can handle an emergency without losing nerve, or going to pieces when the bottom falls out;

If you can talk or write to a subordinate in a way that will elevate him, rather than cause him to lose his self-respect;

If you are not one of that class of talking "live wires";

If you have learned the difference between cheapness and economy;

Then you're in a fair way to become a really big man on a railroad—a roadmaster.

Most railroads today are running wild on labor, while doing nothing in the way of backing it up by materials. Where labor absorbs more than its percent of the cost of maintenance, it is certain that the track work is not being efficiently done. Mr. Editor, if you have a roadmaster on your staff, let him show up some of the facts bearing on this feature.

W. L. DERR.

Locomotive Runners' Working Conditions

TRENTON, N. J.

TO THE EDITOR:

Your editorial of October 29, setting forth, in detail, what to do to revise railroad employees' wages, opens up a good many avenues of possible progress. Not the least in importance of the questions now before us is that raised by Professor Cunningham, namely, how to restore the normal difference between the pay of an experienced locomotive runner and that of a comparatively unskilled track laborer or shopwork helper. Our paternalistic government advanced wages in war time on the basis of an arbitrary standard of living; a man who was getting $45 a month was advanced to a level with others who had been receiving $75; this on the theory that both ought to be enabled to live on the same scale of expenditure. This is beautiful, as socialism; but in real life the sober fact is that the track laborer, because of lesser abilities, must live in a poorer house and wear cheaper clothes than does the engineman. And the economist must recognize this fact. We can wish that it were otherwise; but there is no use in fighting immutable laws. The law of supply and demand will, sooner or later, reduce the trackman or advance the engineman; but it is the duty of the employer, howsoever benevolent he may be, to recognize this law frankly every day rather than waiting to be driven by it.

But in readjusting the engineman's wages, it is important to get rid of all false conditions. If he deserves ten dollars a day because of his skill and experience, well and good; but do not pay him two dollars a day more than he is worth just because he, or the company, is wasting that much money.

An engineman of a large Eastern road, writing recently to a local paper in justification of the present rates of pay, said that some enginemen have to move their home with every change of time-table. There, so far as the statement is true, is a serious waste; but the engineman is not responsible for it (except as his brotherhood committee bulldozes the superintendent into making all sorts of petty rules about seniority). In the same letter this engineman says that one-third of the enginemen are on the extra list. In that situation, of course, they earn irregular pay, except when business is rushing. The query arises whether the earnings of these part-time men are fairly stated when included in published exhibits of average personal incomes. A man on the extra list ought to have work on a farm, or somewhere, to fill in the time when he is not running. This again is a cold fact which the socialist and the philanthropist do not like to acknowledge; but the honest economist *must* acknowledge it.

Another waste, for which the railroads and the enginemen (and trainmen) are both to blame, is the great amount of deadheading. Those runners who are required to move their headquarters when their runs are changed by the absurd seniority rules, evade the issue by riding in passenger cars 50 to 100 miles before and after each trip. This was brought out in the investigation of a collision at Stamford, Conn., a few years ago, where a passenger engineman rode 40 miles to and from his work. It is a duty to the public, in the interest of safety, incumbent on both the roads and the brotherhoods, to put a stop to such useless expenditure of energy. The Ivanhoe and the South Byron collisions, two years ago, exposed discreditable conditions somewhat similar to this.

Now is the time, if enginemen's wages or working conditions are to be readjusted, to start a general movement to make our safety arguments and our wage arguments consistent, one with the other.

NEW JERSEY

Do Railroads Want College Men?

MOBILE, Alabama.

TO THE EDITOR:

The railroads want, and need, college men, but what the college man wants, and needs, before he should consider himself qualified to handle the position for which he has taken four years training, is a first-hand knowledge in handling the most intricate element in the transportation machine —that is, the human element.

It will be a bold graduate from any of the engineering schools who will expect to fill an executive, or semi-executive position—if I may use the term—in the maintenance, mechanical or transportation department the day after he graduates.

A. R. A. Clerk says in the *Railway Age* of October 8, 1921, page 661: "When a college graduate is out of school he is mature, and can't earn his salt as a call boy." True he could not and keep up the appearance that the monthly allowance "Dad" has given him for four years has permitted, but he could "pioneer" in the sense that our forefathers did in settling this country, always keeping a lookout for the job ahead, no matter what it is. If he kept his eyes and ears open he would begin to get a first-hand knowledge of the "human element" when he went to call an engineman or a conductor for "Second thirty-two, leaving at 6-10 a. m.," and the man called had been out to a dance most of the night, or had been up with a sick child, or had not made a trip for a week.

The common carriers of the country, with very few exceptions—with special reference to the mechanical department—are the least progressive of any of our larger manufacturing concerns, and there is a good and valid reason for it. Their revenues are limited by a government body, and about 60 per cent of their expenses are fixed by organizations, which at times seemed as strong, if not stronger, than the government. Many of the carriers have frequently been compelled, much against the best judgment of those in charge, to "Do as you've always done," to again quote from the A. R. A. Clerk.

The engineering department has always preferred college men, but we could not make division engineers nor supervisors out of them the day after they were graduated. They must first go to school again and learn to read—read human nature.

A college man has an advantage over his less fortunate fellow. In his four years of college work, his analytical and technical training have been such that it is not necessary for him to "spend a lifetime" in mastering his assigned duties, before he is ready for advancement. But he must understand that advancement is no more rapid—and no more slow —in the railroad business than in any other line of endeavor. Much, as may well be expected, depends upon the man and his personality.

The railroads want and need college men, but the seniority rule which applies with so much force in the mechanical and transportation departments will not permit of their being employed immediately after graduation in either of these, except as an apprentice or in some very humble capacity which they feel they cannot take.

The most open road to positions of trust and responsibility in the railroad business is through the engineering or maintenance of way department, and that road is necessarily a narrow one.

There is no business which so much needs scientific treatment as the manufacture of transportation, and I will venture the assertion—the truth of it may never be proven—that if the carriers had the same freedom of action as other manufacturing concerns, the college men for the railroad business would be at a premium.

H. S. JONES,
Chief Engineer, Gulf, Mobile & Northern.

Proposed Modification of Stop-and-Proceed Rule

Details of Practice on Fourteen Roads Using "Tonnage" Signals, Relaxing the Stop-and-Proceed Rule

THE PAPER by A. H. Rudd, on the Stop-and-Proceed rule, criticising its use as usually employed in automatic block signal practice, which was printed in the *Railway Age* of August 6, page 247, was promptly responded to by F. P. Patenall, signal engineer of the Baltimore & Ohio, whose signal for permitting a train to pass a stop signal without stopping is illustrated in Fig. 1. Since then we have received information from 14 other roads (besides some from roads which have not considered this question) and we give below some notes concerning practice in this detail on these roads.

Mr. Rudd's position is that it is unnecessary to stop a

Fig. 1. Baltimore & Ohio Automatic Block Signal with Auxiliary Arm

train when the engineman can see a clear road a considerable distance ahead, and that the non-stop rule, as practiced quite extensively on steep ascending grades (where oftentimes the starting of a train is slow and difficult) ought to be made universal, regardless of grades. Those who have expressed opinions agreeing in substance with him are F. P. Patenall (B. & O.); T. F. Brennan (B. R. & P.); C. A. Christofferson (Nor. Pac.); and W. J. Eck (Southern). Most of the roads replying to our inquiries have, however, given us no definite expression of opinion on this point. Four have expressed definitely adverse opinions, namely: Central of New Jersey; Chicago & North Western; Great Northern; Louisville & Nashville.

Fourteen roads using these special signals are listed in our table.

The Baltimore & Ohio has in use 78 block signals arranged for this use, an auxiliary arm being used to convey to trains the indication that when the principal arm is horizontal (indicating that the block ahead is occupied) they need not stop, provided the way is seen to be clear. Rule 501 AA, requiring that a train encountering a stop signal shall stop, and then proceed under control, is suspended, and instead the train is to be governed by Rule 501 G: "Proceed at slow speed, prepared to stop short of train or obstruction."

This rule applies to both passenger and freight trains. The main arm and the auxiliary each have an independent operating mechanism. No colored light indications are given with the lower arm; the blade is made visible at night by the rays of the light (uncolored) of the lamp fixed on a bracket near it.

These signals will be found on five different divisions of the Baltimore & Ohio, as follows: Baltimore 21, Cumberland 23, Connellsville 21, Pittsburgh 12, Toledo 1. The locations are largely on ascending grades where, of course, the avoidance of unnecessary stops is particularly desirable.

Many of these signals have been in service eight years and their use is reported as highly satisfactory. F. P. Patenall, signal engineer, sees no objection to making Rule 501 G universal with automatic signals; which is to say, the auxiliary arm is unnecessary.

Supplementing the information given in the table and in the illustrations, we quote from letters from other roads, as follows:

Chicago & North Western.—Those who believe that the relaxation of the stop-and-proceed rule is unwise base their argument on the likelihood of failure of discipline; and this is most concisely expressed by the Chicago & North Western's reply, which says: "Operating officers find it difficult to administer discipline when there is any question about the

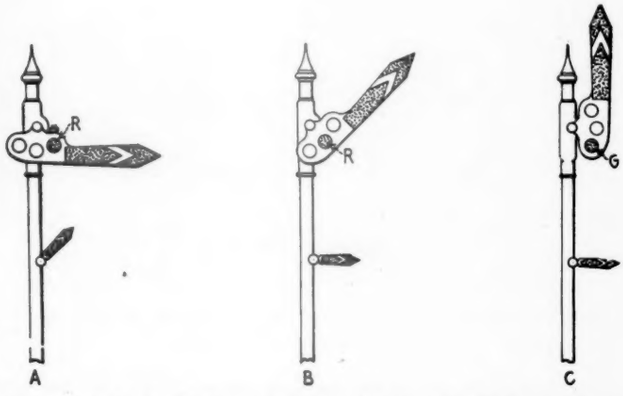


Fig. 2—Lehigh Valley.—Arms colored red; lights, red or green as indicated.

action of the engineman; and in disciplining him for disobedience of automatic signals, there is very often a question, as between the observer and the man who is to be disciplined, as to what happened. Actual stoppage of the train eliminates any possibility of question of speed."

Chicago, Burlington & Quincy. Signals are distinguished by having blades painted yellow and the addition of a purple light fixed to post below blade.

Chesapeake & Ohio.—Uses a yellow fixed light. Between Charlottesville and Staunton, 40 miles, where light signals, three-indication, are now being installed, the regulations will permit all trains to proceed at low speed in an occupied

block; but in connection with the automatic train-control apparatus being installed on that section of the road, it is planned to limit the speed, in all such cases, to 12 miles an hour.

Central of New Jersey.—This road has considered the matter carefully, but has decided to use none of these signals. On the Central of New Jersey lines, where grades are steep, the road is in a mountainous country, with many curves. In a few cases, the block sections have been shortened to overcome the trouble from too frequent stops.

Cleveland, Cincinnati, Chicago & St. Louis.—On this road the double-track lines are, in many cases, signaled so that trains can be run in either direction on either track; and the special permissive signals, when introduced, will have to be arranged as on a single-track line; the connections being arranged so that the shorter arm cannot be displayed in the proceed position when a train is coming in that section from the opposite direction.

Delaware, Lackawanna & Western.—The signals on this road are lower quadrant, home and distant. Both blades are painted yellow. The night indication for the top arm is given by a yellow light, the same as for the lower arm. These signals will be found on three different divisions, as follows: Morris & Essex, 4; Scranton 44; Buffalo 18. The signals on the Scranton division have been in service 16 years; service highly satisfactory.

Delaware & Hudson.—Same style of signal as on the Lackawanna.

Erie—The auxiliary arm is attached to the post 6 ft. 6 in. below the principal arm. The letter "G" denotes "grade." The fixed position of the lower arm is 45 deg. upward.

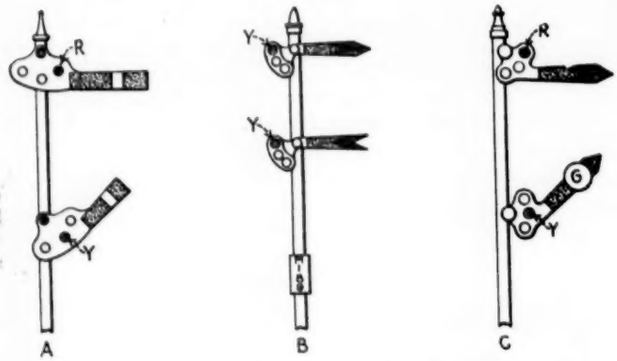


Fig. 3A—B. R. & P.—Arms colored red; lights, red and yellow, as indicated.

Fig. 3B—D. L. & W.—Both arms and both lights yellow.

Fig. 3C—Erie.—Arms yellow; lights, red and yellow, as indicated (lower arm fixed).

These signals are to be found on two divisions; the Kent division between Kent and Marion, 11 eastbound and 16 westbound, and the Delaware division, 10 eastbound and 8 westbound.

Great Northern.—This company planned to introduce some of these signals in Minnesota several years ago, but the State Railroad Commission would not consent to their use.

Illinois Central.—On this road the rule permits all trains to take advantage of the signal to omit the stop, but passenger trains are not so heavily loaded as to make it necessary, and in practice the rule is applicable only to freight trains. These signals are located on five divisions, as follows: Illinois, 13; St. Louis, 6; Wisconsin, 3; Tennessee, 8; Louisiana, 1. The auxiliary indicator is a yellow disk. The letter "T" on the disk (meaning tonnage) is illuminated at night by a lamp fixed behind it. These indicators have been in use about four years, with satisfactory results.

Lehigh Valley.—Of the signals on this road, 25 are on the New Jersey division, 23 miles; 27 on the Wyoming division, 33 miles; eight on the Seneca division, 12 miles; and ten on the Buffalo division, 22 miles. On double-track the small arms are mechanically operated by a connection from the upper arm; but on single-track they are operated by motor and are so controlled as to stand at stop when a train is moving in that block from the opposite direction. In the position shown at *A* Fig. 2 the short arm is illuminated as on the Baltimore & Ohio. Signals in use 16 years with very satisfactory results.

Louisville & Nashville.—Signals similar to those of the Baltimore & Ohio.

New York Central.—On the Eastern lines the signal arrangement is similar to that of the Baltimore & Ohio, except that the lower arm, which is of standard size, has a standard lamp. This light, staggered, in relation to the main light, shows yellow when the other shows red. The instructions contain an illustration of a three-position upper-quadrant signal with blades (pointed) painted red. On the Western lines automatic block signals are arranged for this function by the addition of a yellow disk, as on the

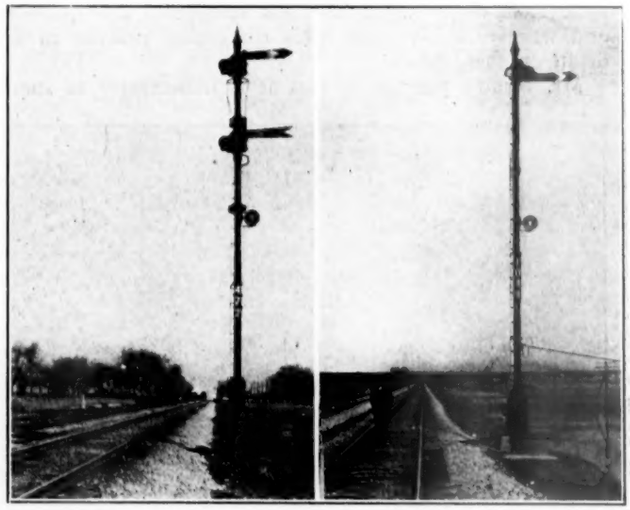


Fig. 4—Illinois Central.—On the left a lower quadrant signal; on the right, an upper quadrant.

USE OF AUTOMATIC BLOCK SIGNALS

WITH SPECIAL ARRANGEMENTS TO OBVIATE STOPPING HEAVY TRAINS WHEN ROAD IS CLEAR FOR SOME DISTANCE AHEAD

Road	Number of Signals in use, how used, etc.
Atch., T. & Santa Fe	On 60 miles of road; on all grades of 1½ per cent or over; all trains.
Baltimore & Ohio	78; mostly on grades; all trains; some on single track.
Buff., R. & Pitts	10; on grades; same as B. & O., but with yellow (or green) light at night. All trains.
Ches. & Ohio	6; others in contemplation; used on grades for heavy freights.
Chi. & N. W.	5; at entrance to large freight yards.
Chi., B. & Q.	10; on grades; for heavy freights only. In use seven years.
C. C. C. & St. L.	Will install two.
Del., L. & W.	66; all trains; on grades of busy freight and suburban passenger lines.
Del. & Hudson	12; on grades; all freight trains.
Erie	27; on grades; heavy freights. The arm is fixed.
Great Northern	Proposed to use in Minnesota, but was forbidden.
Ill. Central	31; on grades; heavy freights.
Lehigh Valley	70; on grades; all trains.
Louisville & W.	19; mostly on grades; all trains.
N. Y. Central (East)	55; on grades; all trains.
N. Y. Central (West)	152; on grades, for heavy freights.
Nor. Pac.	None.
Southern	5; on grades; yellow disk 15 in. diameter, for heavy freights only.

Illinois Central; but instead of *T* for tonnage, the disk shows *G*, for grade.

Northern Pacific.—Four of these were installed in 1915, but, as in the case of the Great Northern, the State Railroad Commission of Minnesota refused to permit the special signals to be used.

Southern.—The signal used by this company is similar to that of the Illinois Central, shown in the engraving, except that the letter is "G" for grade, instead of "T" for tonnage. The letter is illuminated by an electric light when the signal arm goes to the stop position. These signals have been in use on the Southern for about seven years. The disk is 15 in. in diameter and painted yellow. The notes in the second column of the table are intended to show whether the signals with auxiliary arms are provided for the benefit of (a) all trains; or (b) heavy trains or (c) only heavy freight trains. In all cases, the signals referred to in the table are on double-track lines, unless otherwise noted.

Freight Rate Reductions Made Since Ex Parte 74

Traffic Bureau of Commission Prepares Memorandum of Principal Readjustments

WASHINGTON, D. C.

A MEMORANDUM prepared by the Traffic Bureau of the Interstate Commerce Commission showing the principal reductions and readjustments in freight rates made since the increase of August 26, 1921, mainly by voluntary action of the carriers, has been printed as a public document by order of the House of Representatives at the request of Representative E. E. Sanders of Indiana. The compilation was furnished to Congressman Sanders by Commissioner Lewis with the following letter:

Letter of Explanation

In accordance with your request I am sending you herewith a list of the rate reductions which have been made since August 26, 1920, by the carriers with the approval of the commission.

The first seven pages are intended to show the more general reductions, while those following, consisting of over 100 typewritten pages, show reductions of varying extent on specific commodities. The attached list does not by any means cover the total number of reductions which have been made. During the year ended June 30, 1920, there were filed with the commission 135,426 tariff schedules containing changes in freight, express, and pipe-line rates and passenger fares, of which more than three-fourths covered freight. All of these schedules contained a number of changes in rates, some of them carrying as many as 3,000, and it would be safe to say that during the year which has passed since the general increase following Ex parte 74 at least a million changes in individual rates have been filed with the commission. Many of those changes, which because of lack of time it has been impossible to include, are minor in character, consisting of the establishment of commodity rates in lieu of class rates, correction of errors, opening of new stations, and numerous changes of a more or less routine character. A mere enumeration of a number of these rate changes that consisted of reductions and the number that consisted of advances would afford very little basis for determination of the extent to which transportation charges in the aggregate have been advanced or reduced. Some of the individual reductions mean a loss of many millions in revenue to the carriers. The reduction in western grain, grain products, and hay rates alone, it is estimated, amounts to $35,000,000 to $40,000,000.

The list is necessarily incomplete, because the time in which it was prepared—one week—was insufficient to admit of a complete check of the files of the commission in an attempt to gather data on all of the reductions. The compilation of a statement showing all the reductions made would require several months.

The more general reductions mentioned are as follows:

1. Reduction of 7 cents per 100 pounds in rates on lumber and other forest products from California and the Northwest (Washington, Oregon, Idaho and Montana) to Chicago, the Missouri River, and territory east thereof, to and including Pittsburgh and Buffalo. A very large movement is affected by this reduction.

2. Rates on grain from Buffalo and Lake Erie ports, both export and domestic, to points in the Atlantic seaboard States, applicable on grain moved from the West by lake.

3. Withdrawal of the entire increase of 1920 as to rates on range cattle and other live stock from points in the Southwest (Texas, New Mexico, etc.) to feeding grounds in the Middle West and Northwest, to and including Montana. Ordinarily there is a heavy movement during the summer months of stock cattle betwen the points affected; therefore the reduced rates would, under ordinary circumstances, cover a very heavy movement of traffic. So far as is known, however, the movement this year has been lighter than usual and there is little ground to believe that the reduction in rates stimulated the movement to any material extent beyond that which would have taken place without the reduction.

4. Reductions in rates on hay (prairie and alfalfa) from Idaho, Wyoming, and Utah to the Missouri River and points beyond. This reduction amounted to nearly 40 per cent, but there was only a small movement under the reduced rates.

20 Per Cent on Raw Sugar

5. Reduction of about 20 per cent in rates on raw sugar from the Atlantic seaboard to sugar refineries in the Middle West.

6. General reductions amounting to 15 to 25 per cent in rates on hay from Colorado, New Mexico, Arizona, Utah, western Texas, and western Oklahoma to the Missouri River, Chicago, Mississippi River points, and the territory beyond. Ordinarily there is a very heavy movement of hay on these rates.

7. General reductions in rates on sand, gravel, crushed rock, and other road-building materials in New England.

8. Reductions amounting to 25 to 35 per cent in the rates on blackstrap molasses from Gulf ports and other southern producing points to points in the Mississippi Valley, the Southeast, Missouri River points, and the Northern States generally. Blackstrap molasses moves in large volume from and to the points affected for use in the manufacture of stock feeds.

9. Reductions in the rates on grain and grain products from points on the Mississippi River and west to the Rocky Mountains, including the Northwest, to Atlantic ports for export. These reductions cover very heavy movement of traffic and range from 3 to 4 cents per 100 pounds, the principal purpose thereof being to readjust the rates to the Atlantic ports as compared with Gulf ports.

28 Cents on Coal for Lake Movement

10. Reduction of 28 cents per ton on coal from Pennsylvania, West Virginia, Ohio, Kentucky, and other eastern producing points to ports on Lake Erie when destined for movement by lake to Wisconsin, Minnesota, the Dakotas, and the Northwest generally. Annually there is a heavy movement of this coal and the reduction as made will probably affect 10,000,000 tons. The purposes of this reduction were to avoid coal shortage in the Northwest during the coming winter and to readjust the rates on eastern coal as compared with Illinois and Indiana coal in the northwestern territory.

11. Reduction of 3 cents per 100 pounds in the rates on grain products from Buffalo and other New York mills to Atlantic ports for export, applicable in connection with grain transported from the West by lake.

12. Reduction of 25 per cent in the rates on molasses, the refuse of sugar factories in Colorado, Idaho and Utah, to middle western and southeastern points. This commodity is used in the manufacture of feed for live stock and the reduction is for the purpose of assisting in the sale not only of the commodity itself but of the products of alfalfa produced in the Middle West to the farmers and stock raisers of the Middle West and the Southeast.

13. General reductions in the rates on alfalfa meal and other products of alfalfa from Colorado and New Mexico to eastern destinations. The purpose of this reduction was the same as

that made upon molasses from the West, viz., to assist in marketing the products of alfalfa raised in western territory.

14. Reduction of 5 cents per 100 pounds in the rates on corn, wheat, and rye and 3 cents per 100 pounds on oats and barley ex-lake from Buffalo and other lake ports to seaboard for export.

15. Reductions varying from 4 cents to 10 cents per 100 pounds in rates on potatoes from points in eastern Oregon, Idaho, and Montana to points east of the Rocky Mountains and west of Mississippi River, but including Chicago, Peoria, and other Illinois points, as well as St. Paul and Minneapolis.

Reductions on California Cantaloupes

16. Reductions varying from 8½ cents to 33½ cents per 100 pounds in rates on vegetables and cantaloupes from California producing points to points east of Chicago.

17. Reduction of 3 cents per 100 pounds in rates on grain from Illinois points to Atlantic seaboard with corresponding reductions in rates from the same territory to Gulf ports.

18. Reductions of 16½ cents per 100 pounds in rates on fresh apples from points in the Pacific Northwest to points east of the Rocky Mountains.

19. Reductions varying from 15½ cents to 55 cents per 100 pounds in rates on canned goods, dried fruits, and beans from Pacific coast to points east of Rocky Mountains.

20. Reductions varying from 14½ cents to 21½ cents per 100 pounds in rates on canned salmon from North Pacific coast points to points east of the Rocky Mountains.

21. Reductions varying from 8 cents to 15½ cents per 100 pounds on condensed or evaporated milk and buttermilk from North Pacific coast points to points east of the Rockies.

22. Reductions in rates varying from 8½ cents to 25½ cents per 100 pounds on rice from North Pacific coast points to eastern seaboard points.

23. Reductions varying from $1.98½ to $7.25½ per ton in rates on smelter products (copper, lead, etc.) from Colorado, Wyoming, Utah, and New Mexico to points in Central Freight Association territory east of Chicago, eastern trunk-line points, including a few points in eastern Canada.

24. Reduction of 28 cents per ton on coal from Pennsylvania, West Virginia, Ohio, and other eastern producing points, which was limited to ports on Lake Erie when destined for movement by lake to Wisconsin, Montana, the Dakotas, and Northwest generally, was extended to apply on lake cargo coal to ports on Lake Erie when destined to ports on Lakes Michigan or Huron, regardless of whether the coal was for local consumption at those ports or destined to points beyond. This affects an additional movement of about 3,000,000 tons of coal.

25. Reduction of 7½ cents per 100 pounds on grain and grain products from Chicago, Mississippi River crossings, and points in Illinois, Indiana, and other Eastern States to Atlantic ports for export.

26. Reduction of 5 cents per 100 pounds in export rates on flour from Buffalo to Atlantic ports when manufactured from grain brought into Buffalo by lake.

27. Reduction of 5½ cents per 100 pounds on grain and grain products for export from the Missouri River and Mississippi River points, also territory between the two rivers and in Illinois to Gulf ports, Mobile to Galveston, inclusive. Also reductions ranging from 1 cent to 5½ cents per 100 pounds from the territory lying west of the Mississippi River in Nebraska, Kansas, Colorado, and Oklahoma to Gulf ports.

28.—Reduction of 4½ cents per 100 lbs. on domestic grain, grain products and by-products from Mississippi River, Chicago, etc., to eastern points with relative adjustment from other points in Central Freight Association territory to same destinations.

29. Reduction of 20 per cent in long-haul rates on cattle, hogs and sheep in the territory on and west of the Mississippi River and Chicago. The amount of reduction in carriers' annual revenue which will result is not definitely known, but has been estimated to be upward of $10,000,000.

30. Reduction in rates on sand and gravel and crushed stone between practically all points in trunk-line territory, including Pennsylvania, New Jersey, Delaware, Maryland, and portions of West Virginia and Virginia. The basis employed in constructing the reduced rates is 15 per cent higher than the rates in effect prior to the general increase of August, 1920, thus substituting a 15 per cent increase for a 40 per cent increase. It is expected that the annual reduction in transportation charges on the commodities affected will be much in excess of $1,000,000.

31. Reduction of 25 per cent in rates on export iron and steel from Chicago and Central Freight Association points to eastern seaboard, with relative adjustments to South Atlantic coast ports.

32. Reduction of about 50 per cent in rates on munition lint from points in the Southwest to points east of the Rockies.

33. Reductions in rates amounting to from $5 to $10 per car on stock cattle from points in Tennessee to points in Virginia.

34. Reduction of 7 cents per 100 pounds on rates on barrels and kegs, Gulf ports to Ohio River crossings and Central Freight Association points.

35. Reduction of about 63 cents per 100 pounds in rates on orchard heaters from eastern territory to Pacific coast territory.

36. Reduction of about 12½ per cent in rates on domestic grain and grain products between points in eastern trunk-line territory and New England.

37. Reductions in all rates on iron ore throughout the so-called eastern territory, including generally points east of the Mississippi and north of the Potomac and Ohio Rivers, including, of course, ex-Lake ore moving from Lake Erie ports. These reductions will eliminate all increases effected under Ex parte 74, and it is conservatively estimated the amount will reach in round figures $5,000,000 per year.

Various Other Readjustments

A number of other reductions and readjustments involving a considerable number of points of origin and destination and a considerable traffic, but in most cases not quite as important in extent as the ones above outlined, are as follows:

Pig iron.—From southern producing points to Pacific coast territory.

Iron pipe.—From southern producing points to Pacific coast territory.

Iron and steel articles—From central freight territory, including Chicago, to transcontinental territory.

Smelter products.—From Utah and other smelters to Pacific coast.

Vinegar.—From Pacific coast to Missouri River, Mississippi River crossings, Chicago, and points between.

Ore.—A large number of reductions have been made from producing points to numerous smelter points in western territory.

Salt.—From Utah producing territory to Pacific coast.

Sugar.—Pacific coast to Chicago, Mississippi River, and west thereof.

Road-building material.—A general readjustment in several States.

Ground limestone from Michigan.—To all New York destinations.

Sulphur.—From all Texas producing points to destinations in all States east of Colorado territory and to and including Atlantic seaboard and southeastern territory.

Grain minimums.—General readjustment of minimum carload weights, resulting in reductions (entire United States).

Copper products.—From upper Michigan producing points to Atlantic ports, iron and steel articles, bars, and rods from Alabama, Tennessee, and Kentucky producing points to Gulf ports on traffic destined to Pacific coast via Panama Canal.

Commodities of all descriptions.—From interior Atlantic seaboard territory to Mobile, Ala., and points beyond. Restoration of the rail and lake differential under the all-rail between eastern trunk line territory and western points, also restoration of the rail and water differential via coastwise steamers between trunk-line territory, Missouri River, Colorado, and Utah common points, including points west of the Mississippi River.

Brick rates.—There has been considerable readjustment of brick rates in the various parts of the country.

Cotton export.—From eastern producing points to Pacific coast ports.

Commodities for export.—Practically all commodities for export from points west of the Indiana-Illinois State line and south of the Ohio River to Pacific coast ports, including agricultural implements, canned goods, cooperage, dry goods, glassware, iron and steel machinery, pig lead, oil (lubricating), petroleum and its products, paints, paper and articles thereof, roofing material, rope, soap, heating apparatus, tires, tobacco and articles manufactured therefrom, vehicles of all kinds, wood pulp and wood-pulp board.

Ice.—Emergency ice rates applying generally throughout western trunk-line territory.

Apples.—From Texas producing points to St. Louis, Kansas City, Chicago, Milwaukee, Fox River, Memphis, Louisville, Cincinnati, Omaha, Davenport, and Little Rock-Fort Smith territories.

Coal.—From Illinois mines to Michigan points. From Canon City district, Colorado, to Colorado, Kansas, and Nebraska destinations. From Montana to approximately 150 destinations in Montana.

Copper wire and cable.—From Montana points to transcontinental territory.

Sugar for export.—From Sugarland, Tex., to Gulf ports.

Nut coal.—From points in New Mexico to points in Colorado.

Fruits and vegetables.—From El Paso and Deming, N. Mex., to Arizona and New Mexico points.

Copper and lead bullion and smelter products.—From Pacific coast points and Montana smelters to points in New York, New Jersey, Ohio, Pennsylvania, Minnesota, Michigan, and other States.

Asphalt.—From Gulf ports to points in various States in the South and to Ohio and Mississippi River crossings and points basing thereon.

Lumber.—From Virginia to eastern cities, Canadian points, trunk-line and New England territories.

Commodities, imported via Pacific coast.—The following list of articles imported from the Orient via ports on the Pacific coast destined to all territory in the United States east of the Rocky Mountains: Antimony ware and other antimony products, bamboo, rattan, fiber; brooms, brushes, bristles; bulbs, plants, and stems; buttons, agate or porcelain; camphor, crude, and camphor oil; chinaware, glassware, earthenware, porcelain; coconut, concentrated or desiccated; coffee, green, in bags; copra, copra cake, and copra meal; eggs, dried, shelled, and albumen; fiber, flax, jute, or straw, hemp, sisal, rice straw, flax, tow, and waste; glassware, glasses, jars; gums, all kinds; hides, cattle, sheep, goat; peanuts; oils, vegetable; palm kernels; rubber, crude; sago, sago flour, tapioca, tapioca flour, cassava flour, and potato flour; silk, waste; vegetable tallow; skins and hides; rugs and mats; tea, tea dust, siftings, sweepings, and waste; tin, bar, block, pig, or slab; toys, all kinds.

Item 38.—Reduction on manganese and chrome ore throughout eastern territory, 28 per cent.

Item 39.—Sand and gravel and crushed stone and other highway construction materials in Ohio, Michigan, Indiana, and parts of Illinois, 15 per cent reduction.

Item 40.—Reduction of half of the ex parte 74 increases on grain, grain products, and hay west of the Mississippi, amounting to at least $35,000,000.

"Satisfactory Settlement" Ends Threatened Strike

Labor Board's Efforts to Avert Walkout Successful—Brotherhoods' Threats Again Win Concessions

WITHIN A FEW HOURS after the last issue of the *Railway Age* was on the press, leaders of the five train service brotherhoods, assembled at Chicago, voted to recall their orders for a strike which was to have started on October 30. This action was taken as the result of a combination of circumstances, the most important of which were: (1) the attitude of the Labor Board as indicated in the memorandum handed down by the Board and reproduced in part in the *Railway Age* of October 29, page 821; (2) the "peace" efforts of B. W. Hooper, member of the public group on the Board; (3) the preparations which had been made by the government to combat the strike; (4) the attitude of W. G. Lee, president of the Brotherhood of Railroad Trainmen, who opposed the calling of the strike at this time; (5) the plans formulated by the carriers for preventing any serious interruption of traffic, and lastly the general disapproval of the public.

In a reference in last week's *Railway Age*, page 823, to the statement of the Board on October 25 (the statement in question appeared on page 821) it was pointed out that this statement said definitely, that no further reductions for any group of any employees would be considered by the Board until rules and working conditions for that group were disposed of. It was also noted that as to overtime pay, in the cases of the shop crafts rules already promulgated, overtime provisions were retained to a large extent. Mr. Cuyler, it was further pointed out, had informed the Board that none of the carriers had any intention of making further changes in wages or working conditions without submitting controversies to the Board. The reference to the Board's statement continued, "These facts are pointed out as constituting what might be taken as a 'satisfactory settlement' by the leaders of the labor organizations." It developed that the Board's memorandum of October 25, together with the statements of representatives of the carriers at the hearings on October 26, did actually constitute a "satisfactory settlement" to the brotherhood leaders.

It was evident at Wednesday's inquiry as Mr. Hooper questioned the heads of the five train service brotherhoods regarding their reasons for calling this strike that, with the exception of the Brotherhood of Railroad Trainmen, the strike vote was taken ostensibly in protest to the wage reduction of last July but in reality to place a club in the hands of the labor leaders with which they might ward off further reductions in wages or changes in working conditions, especially the punitive overtime provisions in the brotherhood's schedules. The strike vote of the Brotherhood of Railroad Trainmen was taken solely on the wage cut of last July and it was noticeable in this connection that Mr. Lee never openly favored a walk-out. When it was pointed out to the executives of the organizations that the Board's previous memorandum contained an assurance that the Labor Board would not "enter into a prolonged hearing on an application to reduce wages at this time," the memorandum was accepted by the labor leaders as a satisfactory settlement of one of the three major excuses for the strike call. It was probably recognized at the same time that the comparatively small wage reduction of last July did not, in itself, constitute a reasonable excuse for attempting to tie up the railroads of the country. Furthermore, the labor leaders were cognizant of the fact that the Labor Board has already ruled, in the case of the shop crafts, in favor of the principle of time and one-half for overtime except for Sunday and holiday work and has by other means indicated a disposition to consider punitive overtime favorably where it does not constitute an undue hardship upon the carrier. The application of this attitude to the third excuse of the brotherhood leaders for ordering the walk-out, i. e., proposed changes in working conditions, would undoubtedly constitute a "satisfactory settlement" of that point. The net result then was practically a victory for the brotherhoods involved, inasmuch as all of the organization chiefs had stated bluntly that they could only call the strike off unless a "satisfactory settlement" had been reached, then 24 hours later announcing that "satisfactory settlement" by the recall order.

B. W. Hooper Addresses Brotherhood Chiefs

The vote ending the strike came at midnight after an all-day session on October 27. Earlier in the day the general chairman of each of the five organizations conferred separately. In the afternoon a joint session was held which was addressed by Mr. Hooper. The latter's appearance before the Board is said by the brotherhood chiefs to have marked the turning point in their discussions.

Mr. Hooper presented to the brotherhood leaders the memorandum of October 25, which through some oversight had not been officially given to them before, and explained and emphasized the points contained therein which could be accepted by the brotherhood leaders as constituting a "satisfactory settlement." He also emphasized the announcement of representatives of the carriers at the Wednesday inquiry, that no changes in either wages or working conditions will be sought except as provided by the law through the Labor Board.

Mr. Hooper Explains Visit to Labor Representatives

Upon returning to his offices, Mr. Hooper issued a statement in which he said in part:

The Labor Board did not send me before the brotherhood and only two or three members knew I was going. I went to talk to the representatives of the organization as a man, a citizen, and a member of the board, with the hope that I might make myself useful in averting the strike. Perhaps I went by invitation, certainly by agreement, and the brotherhoods sent Mr. Whitney, vice-president of the trainmen, to accompany me.

The immediate occasion of my appearance before the leaders of the employees was this:

Day before yesterday I submitted to the Labor Board a memorandum, bearing indirectly upon the strike situation, which was adopted. By an awkward oversight this memorandum did not reach the chief executives of the brotherhoods until last night and had not yet been presented to the committeemen and chairmen present in the city.

This memorandum was laid before the executives of the carriers on the day it was adopted. I read this memorandum to the several hundred officers of the brotherhoods this morning and, in addition, addressed them along general lines, urging every consideration possible against the strike.

Naturally, it was not within propriety for me to commit the Board or even myself to any given action on any question that may hereafter come before the Board further than the course of procedure set out in the memorandum referred to.

This memorandum, briefly stated, expresses the purpose of the Board to complete its consideration of the rules and working conditions of each class of employees before taking up consideration of any application affecting wages of that particular class, and give ample reasons for that course. These reasons it is, perhaps, unnecessary to recapitulate.

In my judgment that memorandum constitutes the only practical basis for an honorable adjustment of the present strike trouble and works no injury to anybody. It is well within the discretion and power of the Board to fix the order in which to dispose of matters before it.

If this memorandum has the effect of removing the principal

cause of friction from immediate operation, it has an additional virtue.

Resolution Calling Off Strike Explains Brotherhood's Position

The text of the resolution calling off the strike adopted by the brotherhoods opened with a history of the recent events in the controversy. It called attention to the resolution of the Board ordering the inquiry on October 26 and said in discussing the testimony given at that time:

Whereas, at said hearing the Board was given full information as to the contentions and purposes of the organizations and the carriers in connection with the wage reduction provided by Decision 147 as to the intention of the carriers in reference to further reductions in the pay of employees, as to reductions in wages made by a number of carriers without authority of the Board and as to applications of carriers for the elimination of time and one-half for overtime and changes in agreements relating to working conditions of the employees; and

Whereas, the contention of the representatives of the employees before the Labor Board was that the proposed strike was voted for in opposition to Decision 147 of the Board and was justified upon the ground that no employee may be required to continue in the service of the employers on a scale of wages considered by said employee to be unsatisfactory; and

Whereas, the Board propounded numerous questions for the purpose of developing information as to what effect the statement contained in the ballot relating to the proposed further reduction in wages and changes in working rules had upon the employees in casting their ballots for or against a strike, in response to which the representatives of the employees expressed the opinion that the matters, referred to in the statement, were of vital concern to the employees, but that the ballot expressly stated that it was cast in opposition to or in favor of the acceptance of the decrease in wages, as provided in Decision 147; and,

Whereas, The represenatives of the employees seriously objected to the criticism of the Board to the effect that in its opinion they were in violation of the law in declaring a strike upon matters not yet decided by the Board, and took occasion to call the Board's attention to the injustice of this criticism in view of the fact that 35 or 40 carriers, which were listed and made a part of the record, had violated Section 301 of the Transportation act, as well as the decision of the Board, by arbitrarily putting into effect reductions in wages and by making changes in working conditions without complying with the provisions of the act; and,

Whereas, After interrogating the representatives of the employees the Board interrogated the representatives of the carriers; and,

Whereas, In a reply to questions propounded to him, T. DeWitt Cuyler, chairman of the Association of Railway Executives, representing 95 per cent of the carriers cited to appear, stated that none of the carriers represented by his association would revise wages or change working conditions unless by agreement with their employees or by decision of the Labor Board, nor would they violate the Transportation Act in any particular in respect to any dispute between the carriers and the employees; and

Whereas, In reply to the questions propounded by the Board to the representative of one of the carriers a number of the Association of Railway Executives, who had reduced wages and changed working conditions without authority of the Board, he stated that such reduction in wages and changes in working conditions would be restored and that no further changes would be made except upon decision of the Board or by agreement with the employees; and

Whereas, We interpret this question and answer to mean that all carriers who have reduced wages or changed working conditions without authority of the Board will voluntarily cancel such reduction in wages or changes in working conditions or be called to appear before the Labor Board and show cause why they should not do so; and

Whereas, In reply to questions propounded to representatives of short line railways such representatives stated that they would comply with the provisions of the Transportation Act and that no reduction in wages or changes in working conditions would be made in violation of the law, and

Whereas, In view of the questions propounded by the Board to the carriers that reduced wages or changed working conditions are in violation of the law, there is every reason to expect early decisions requiring the cancellation of such reduction in wages and changes in working conditions.

Board's Memorandum an Acceptable Basis

The Board's memorandum of October 25 is then quoted and the following comment made:

Whereas, we interpret the foregoing memorandum to mean a number of important things to the membership of our organizations. Among these things we mention:

First, it is evident that the Board has adopted a policy under which it will not be in a position to give consideration to any application, affecting the wages of transportation employees, for a considerable period of time.

Second, that it does not propose to take any action on wage applications, affecting any class of employees, until it is definitely known what working conditions apply.

Third, that the train and engine service employees will be given full consideration in view of the hazard, responsibility and other conditions peculiar to their employment; and,

Whereas, in paragraph 3 of the Board's memorandum and during the progress of the hearing the Board announced that owing to the failure of the carriers and their employees to agree upon the organization of voluntary adjustment boards, provided for by law, the docket of the Labor Board has become so seriously congested as to make it impossible to give proper and full consideration without extended delay to important questions submitted for its decision; and

Whereas, we construe this paragraph and announcement to mean that the Labor Board will lend its support to the organizations in their efforts to induce the carriers in different regions to speedily organize such adjustment boards in order that the Labor Board may comply with the provisions of the law, that it shall receive for hearing and as soon as practicable and with due diligence decide disputes, involving grievances, rules and working conditions, which are not decided as provided in Secton 301 and for which such adjustment boards would be required to receive for hearing and decision under the provisions of Section 303; and

Whereas, in addition to the foregoing it has become apparent to your representatives that the powers in control of railways have so arranged conditions as to shift the burden and expense of a strike to the shoulders of the people; and,

Whereas, with this information before us, we feel that a solemn obligation rests upon us to forego the full satisfaction of our demands rather than to cause loss and suffering to the people by carrying on a strike, the expense and hardships of which would fall upon the public instead of upon the railroads; and,

Whereas, as a result of the activities of these organizations since July the public is assured a reduction in freight and passenger rates, which would not otherwise have been made, and which should be reflected in a substantial reduction in the cost of living that will in a measure compensate the employees for the reduction in wages imposed upon them; and,

Whereas, we are not unmindful of the public concern in the issues involved in the strike, but point out that the public is not correctly informed upon these issues. The representatives of the employees have found it impossible, in view of the attitude of the press, to get their case properly presented to the American people; therefore, the people have formed conclusions upon the matter from information wholly inaccurate and misleading as published from day to day in the newspapers; we believe that if the public knew the facts we could with entire confidence rely upon its decision; and,

Whereas, the employers of labor, except in the railway service, consider it a reasonable and fair policy to make term agreements with their employees, and every adjustment of wages is made for a period of one, two or three years; and,

Whereas, it was one of the aims of the employees in this dispute to secure a settlement of the railroad wage controversy for at least a period of one year, in order that the business interests of the country might not be disturbed at frequent intervals by serious disputes between the railroads and their employees, too often reaching the point of a threatened cessation of work by the employees, and that the employees would not be obliged to assume the enormous expense incident to conducting repeated hearings before the Labor Board involving their wages and working conditions, and because the employers as well as the public are entitled to settled conditions in respect to these important matters; and

Whereas, we here take occasion to inform the public that as a result of the World War railway employees were the last to receive increases in wages and among the first to have a reduction of wages imposed upon them; therefore, be it

Resolved, That we, the Executive Committees and General Chairmen representing the organizations named herein, are sincerely of the opinion that the memorandum announcing the policy of the Board, and the pledges of the railway executives, made to the Board, constitute an acceptable basis of settlement, justifying the calling off of the strikes, which were authorized by a vote of members of our organizations.

And we hereby call off such strikes, having confidence that good results will follow the adoption of the memorandum by the Labor Board and the pledges of the railway executives made to the Board at public hearing on October 26; and, further, to afford

an opportunity for reduction of freight and passenger rates to correspond with existing reductions in wages, to determine what effect such reductions in freight and passenger rates will have upon the cost of living.

Labor Board Renders Decision on Strike

The Labor Board's decision finally disposing of the principal questions involved in the strike situation was handed down by the Board on October 29. According to the terms of this decision, railroad unions calling strikes in the future in violation of the Board's decisions will be outlawed, and furthermore, will lose all benefits and rights to protection and appeal to the Board under the Transportation Act. At the same time, the Board definitely ruled that no changes in working conditions or wages may be made until duly authorized by the Board. The decision says in part:

The subject and impelling cause of the inquiry was the threatened general strike of the employees comprising the membership of the above named labor organizations on practically all the first class railroad lines in the United States, which, if it had culminated, would have resulted in a national calamity of incalculable magnitude. It was the purpose of the Board to develop the causes and true facts and conditions to the end that all possible measures might be taken to avert the disaster. It was shown that a vote had been taken and a strike called on all the roads, and as to the Brotherhood of Railroad Trainmen, had gone into effect on one, the International and Great Northern, on account of dissatisfaction with Decision No. 147 of the Board making a reduction in wages. Since the hearing and as a result thereof the strikes have all been called off by the officials of the organizations and the danger of an interruption of traffic removed.

The representatives of the carriers and the representatives of the employees have announced their intention and purpose to conform to the law, and abide by the orders of the Board. These facts render it unnecessary for the Board to make any further orders on or about this matter, and move it to congratulate the parties directly interested and the public most vitally and profoundly interested on this return to industrial peace, triumph of the reign of law and the escape from this national disaster.

But at this time, and while the matter is so intensely before the minds of all, the Board deems it expedient and proper to make its rulings and position on some of the points involved so clear that no ground for any misunderstanding can hereafter exist.

First, when any change of wages, contracts or rules previously in effect are contemplated or proposed by either party, conference must be had as directed by the Transportation Act, and by rules or decisions of procedure promulgated by the Board, and where agreements are not reached the dispute must be brought before this Board, and no action taken or change made until authorized by the Board.

Second, the ordering or authorizing of the strike by the organizations of employees parties hereto was violation of Decision 147 of this Board, but said strike order having been withdrawn, it is not now necessary for the Board to take any further steps in the matter.

The Board desires to now point out that such overt acts by either party tending to and threatening an interruption of the transportation lines, the peaceful and uninterrupted operation of which are so absolutely necessary to the peace, prosperity and safety of the entire people, are in themselves, even when they do not culminate in a stoppage of traffic, a cause and source of great injury and damage.

The Board further points out for the consideration of employees interested that when such action does result in a strike, the organization so acting has forfeited its rights and the rights of its members in and to the provisions and benefits of all contracts theretofore existing, and the employees so striking have voluntarily removed themselves from the classes entitled to appeal to this Board for relief and protection.

Strike "Settlement" Represents Truce

Now it is possible to appraise the developments of the past few weeks correctly and it is generally agreed that, although a serious crisis has been averted, the "settlement" is but temporary and that the issues which led to the polling of a strike vote have not been settled definitely and will again become of major importance at a time when a threatened walk-out may be fraught with much more danger than at the present time. It is plain, for instance, that the so-called "settlement" of the strike does not obligate the carriers in any way except perhaps not to arbitrarily reduce wages or change working conditions until all of the terms of the Transportation Act have been complied with. In this connection, Samuel M. Felton, president of the Chicago Great Western, said recently: "Our program for the immediate future, as announced on October 14, remains unchanged. This program includes plans to ask the Labor Board for permission to make further reductions in wages and to pass the savings made in this manner to the public in the form of reduced rates."

The position of the labor organizations as to this program indicates that they are depending upon the assurances contained in the Board's memorandum of October 25 and the statements of Mr. Hooper. This is indicated by the remark of Mr. Lee, who, upon being told of Mr. Felton's announcement, said, "Of course, they will continue to ask for the 10 per cent reduction. The Board's docket is crowded, however, Mr. Hooper told us, and there is no chance of immediate action."

I. & G. N. Strike Called Off

The other remaining issue in the strike situation is the situation on the International & Great Northern, where the trainmen walked out on October 22. The progress of this strike up to October 26 was described in the *Railway Age* of October 29 (page 823).

Conflicting reports have been circulated regarding the strike situation on the International & Great Northern and as a result Thornwell Fay, executive officer for the receiver, was asked to make a statement as to developments from October 25 to date. In reply Mr. Fay said:

Report splendid progress from October 25. All embargoes were raised on October 27, and since then we have been in position to handle promptly all traffic offered. I understand Labor Board states strike called off, and I am informed President W. G. Lee of the Brotherhood of Railroad Trainmen concurs. General chairman on International & Great Northern did not so advise his men, and vice-president of trainmen's organization now here in an endeavor to have strikers restored. To this end he has taken subject up with United States court at Houston, Texas, and matter heard November 2.

Emergency Organization for Meeting Strike Situation

WASHINGTON, D. C.

PLANS WHICH had been made by the Department of Commerce for mobilizing the nation's food, fuel and other supplies in the event of a strike and an outline of a federal emergency organization which had been formed were made public by Secretary Hoover on October 27 following the calling off of the strike. The emergency organization included Secretary Hoover as chairman, with an assistant and an executive secretary, and divisions, consisting of a chairman and assistant, on railway transportation, motor transport, breadstuffs, meat, livestock, dairy products, canned goods and milk; fruits and vegetables, coal and oil. C. E. Spens, vice-president of the Chicago, Burlington & Quincy, was named as chairman of the rail transportation division, and E. S. Gregg, head of the transportation division of the Bureau of Foreign and Domestic Commerce, as assistant. The organization also included liaison officers of the War Department and J. W. Powell, president of the Emergency Fleet Corporation, as liaison officer of the Shipping Board. In order to facilitate contact, the country was divided into regions under regional representatives centering at Boston, New York, Chicago, Houston, San Francisco, Washington or Pittsburgh, Aberdeen or Pierre, Seattle, Atlanta and Kansas City.

The organization set up in Washington was to have as its primary object the handling of interstate and inter-

regional problems, all other questions being left to local initiative of governors' organizations.

The plan of operation and a statement of the general situation was outlined as follows:

I. Determination of Fact

1. To determine the primary, secondary and tertiary stocks of food, fuel and feed throughout the country—*Primary* stocks being those available within state radius; *Secondary* being those within interstate water and motor radius; *Tertiary* being those within interstate rail and water radius.
2. To determine the areas dependent upon interstate movement for supplemental supplies.
3. To determine the character of movement, whether by water, rail or truck, required or available.

II. Administrative

1. To assist the governors and their state organizations in securing interstate movement of the supplemental necessities that they require.
2. To set up relations with food and fuel industries to assist in interstate or inter-regional movements of supplies.
3. To secure co-ordination of railway and water movement in delivery of these necessities to points in need.

III. State Activities

The whole supply problem is largely primary for the first 30 days and secondary for the next 60 days.

In addition to the federal survey, each locality will make its own survey of commodities and the transportation problem comprising:

1. Commodities: a. breadstuffs, b. sugar, c. meats, d. milk, e. groceries, f. potatoes, g. other perishables, h. feed, i. coal, j. gasoline.
2. Transportation: a. trucks, b. water, c. amount of railway movement that develops.
3. Local Resources: a. town stocks, b. immediate surroundings, c. secondary reserves.

In making these surveys, two alternatives will be apparent: 1. That the railways cease operation and that reliance must be placed solely upon trucks and water. 2. That limited operation of railways is maintained.

The Present Situation as to Supplies

The food situation is generally good. Stocks are well distributed and the movement to secondary reserves already brought about by federal action should prevent any hardships for four to six weeks in any section, even though all rail transportation should stop—providing motor and water transportation is fully utilized.

Assuming that Railway Operations Entirely Cease

In case of complete stoppage of the railways, there are available in all towns and cities, supplies for about 30 days or more.

All towns and cities outside of the "dense area" can supply themselves by motor or water for at least 60 days without any consequential interstate movement.

In the "dense area" (New England, New York, New Jersey, Delaware, Maryland, Pennsylvania, Ohio, Indiana, Illinois) certain commodities exist or can be supplied by water and motor movement alone for 60 days. There are few exceptions, which will be provided for.

The supplies of coal throughout the country are generally satisfactory.

All public utilities are supplied with coal for approximately 75 days.

Owing to the almost universal pipe line supply or refineries of their location at points available to water transport, there will be no difficulty in maintaining the crude oil supply, and consequently wide distribution of gasoline. Steps have been taken in anticipation of any difficulties to provide supplies where necessary.

If Railways Are Operated 20 Per Cent.

The public can be supplied with all essentials indefinitely by a series of priorities.

Preparedness

The public should be informed that it can be of assistance in the emergency by confining purchases to daily requirements. Hoarding of any commodity is to be carefully avoided —so as to prevent undue price advances and profiteering.

The department will supply graphic maps to state committees showing primary reserves of each commodity available without movement; secondary reserves available by water and motor without rail movement; tertiary reserves available with 20 per cent railway operation; lines of railways to be operated in first instance; priorities to be established between commodities; shipping and barge arrangements; truck transport available; truck mobilization for long and local hauls.

Organization is complete for reports of volume and character of traffic moving by rail and water and for co-ordination of such traffic.

Complete information will be sent out to governors' committees the first day of the strike.

It is not expected that interstate movement will be undertaken before the fifth day, by which time the amount of railway movement available will be evident.

Two primary changes in the situation from pre-war conditions are to be noted:

1. By war experience the country understands the whole process of civilian and industrial organization to meet emergencies.
2. The motor truck has given every town an extended radius of food supplies by some 50 miles and thereby protects such vital matters as milk and perishables against the first shock.

One phase of the government's plans for dealing with a strike if it came was revealed by the instructions sent to the district attorney in Texas, which the attorney general said would be a model for similar orders to other district attorneys. As an initial step the local federal courts were to be called upon to issue a proclamation setting forth the inherent power of the government to intercede to prevent the disastrous effect upon the community of interference with interstate commerce. It was also understood that plans had been made for obtaining injunctions against the leaders if a strike had been called.

Train Service Board of Adjustment For Southeastern Territory

IN COMPLIANCE with an agreement entered into some time ago between 16 railroads in southeastern territory and the Brotherhood of Locomotive Engineers, Brotherhood of Locomotive Firemen and Enginemen, Order of Railway Conductors and the Brotherhood of Railroad Trainmen, a board to be known as the Train Service Board of Adjustment for the Southeastern Region, has recently been organized at Washington, D. C., with the following personnel: Representing the railroads, Col. Albert B. Bayless, Louisville & Nashville, chairman; W. T. Caldwell, formerly general superintendent, Southwestern District, Southern Railway; W. A. Durham, formerly member Railroad Adjustment Board No. 1, and E. W. Grice, assistant to president, Chesapeake & Ohio: representing the organizations, F. A. Burgess, B. of L. E., vice chairman; W. N. Doak, B. of R. T.; C. J. Goff, B. of L. F. & E., and W. C. Turner, O. R. C. The office of the Board is at 1319 F Street, N. W., Washington, D. C., and John L. Mindling has been appointed secretary.

The jurisdiction of the board is confined to the adjustment of disputes growing out of personal grievances or out of the interpretation or application of the schedules, agreements or practices now or hereafter established on the railroads named which cannot be adjusted by direct conference between representatives of the individual railroads and their respective employes. All decisions of the new board shall be final and binding upon both sides if approved by a majority of the full membership. The board will have no jurisdiction over disputes involving rates of pay, or in rules covering working conditions, jurisdiction over such matters being vested in the Labor Board. The roads involved are:

Atlantic Coast Line
Atlanta & West Point and the Western Railway of Alabama
Central of Georgia
Charleston & Western Carolina
Chesapeake & Ohio
Florida East Coast
Georgia
Gulf & Ship Island
Louisville, Henderson & St. Louis
Louisville & Nashville
Nashville, Chattanooga & St. Louis
Norfolk Southern
Norfolk & Western
Richmond, Fredericksburg & Potomac
Seaboard Air Line
Winston-Salem Southbound

America's Wealth Due Largely to Railway Expansion

Increased Population, Production and Wealth Have Followed Closely Railroad Expansion

By Dr. J. M. Goldstein,
Professor of Economics, Institute of Industry and Trade and University of Moscow

TRAVELING IN 1913 over the United States and Canada, the writer was struck by the truly phenomenal influence produced upon the economic growth of these countries by railroads only recently built. Endless prairies or deserts, containing a few years before only rare settlements with a few scores of inhabitants, had within five or ten years changed into endless pastures and smiling fields, with numerous herds of cattle and prosperous farms. And what used to

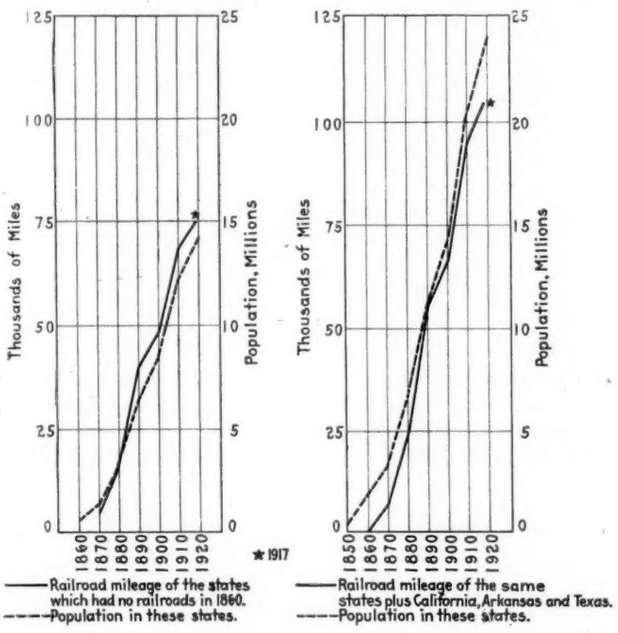

Thousands of Miles
Population, Millions
1860 1870 1880 1890 1900 1910 1920
★1917
1850 1860 1870 1880 1890 1900 1910 1920
——Railroad mileage of the states which had no railroads in 1860.
----Population in these states.
——Railroad mileage of the same states plus California, Arkansas and Texas.
----Population in these states.

Fig. 1

be only straggling little settlements of a few houses had changed within some ten years into prosperous towns with tens of thousands of inhabitants with immense grain elevators and stockyards, splendid stores and numerous huge factories and mills.

	Population			Per cent of increase
	1900	1910	1920	
Tacoma, Wash.	37,700	83,700	97,000	158
Portland, Ore.	90,400	207,200	258,300	186
Houston, Tex.	44,600	78,800	138,300	210
San Antonio, Tex.	53,300	96,600	161,400	213
Oakland, Cal.	67,900	150,200	216,300	223
Dallas, Tex.	46,300	92,100	159,000	243
Seattle, Wash.	86,100	237,200	315,000	266
Fort Worth, Tex.	26,700	73,300	106,500	299
San Diego, Cal.	17,700	39,600	74,700	322
El Paso, Tex.	15,900	39,300	77,600	388
Los Angeles, Cal.	104,300	319,200	576,700	453
Oklahoma City, Okla.	10,000	64,200	91,300	813
Tulsa, Okla.	1,400	18,200	72,100	5,050
	601,400	1,499,600	2,344,500	290

As an illustration, it will be sufficient to call attention to the development of agricultural areas and cities in the states of Washington, Oregon, Texas, Oklahoma, California and the western provinces of Canada—Manitoba, Saskatchewan, Alberta and British Columbia.

How rapidly some of the cities were increasing their population under the influence of newly built railroads in the above mentioned sections of the United States may be seen from the figures of the last three censuses in the preceding table covering the 20-year period from 1900 to 1920.

In this connection it is highly interesting to note the fact that in spite of the tremendous development of economic life in the United States under the influence of the war, and the ensuing progress of agriculture and industry after the conclusion of peace, the increase in the population of the cities enumerated above was, during the period from 1910 to 1920, not only in its relative but in its absolute volume as well, considerably slower than during the period from 1900 to 1910, as shown by the following comparison:

	Increase of population	
	1900-1910	1910-1920
Absolute increase	898,200	844,900
Ratio of increase	141%	62%

Comparing these figures with the increase in the railroad

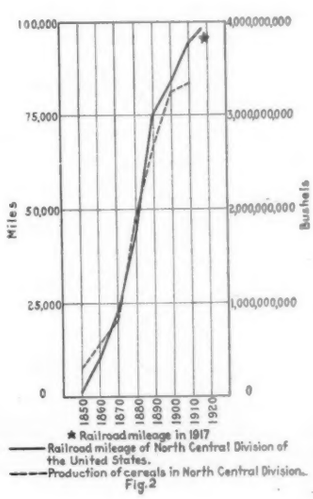

Miles
Bushels
1850 1860 1870 1880 1890 1900 1910 1920
★ Railroad mileage in 1917
——Railroad mileage of North Central Division of the United States.
----Production of cereals in North Central Division.

Fig.2

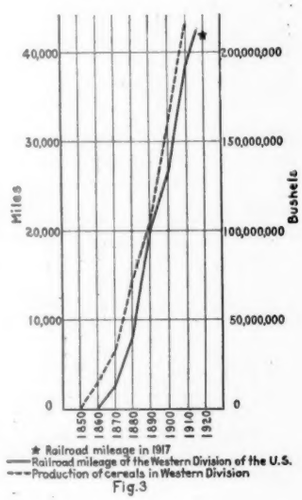

Miles
Bushels
1850 1860 1870 1880 1890 1900 1910 1920
★ Railroad mileage in 1917
——Railroad mileage of the Western Division of the U.S.
----Production of cereals in Western Division

Fig.3

Figs. 2 and 3

mileage of the states in which these cities are situated, the following results are obtained:

	Increase of railroad mileage	
	1900-1910	1910-1918
Absolute increase	12,768 miles	4,507 miles
Ratio of increase	57%	13%

The total railroad mileage in these five states in 1900 was 22,426 miles, in 1910 it was 35,194 miles and in 1918, 39,791 miles.

Population Increase Parallels Increased Construction

A rapid increase in the population is, therefore, observed not during the last decade, but during that of 1900 to 1910, when an enormous amount of railroad construction was going on in these sections. At what an accelerated rate it was proceeding at that period in these states is to be seen from the fact that during the same period of 1900 to 1910 the increase

in the railroad mileage of the other 43 states was nearly 3 times slower, being only 20%.

It is understood, of course, that an important share is due to the wealth of the natural resources of these states, such, for instance, as oil and mineral deposits, to the proximity of convenient ocean routes, etc. Nevertheless it should not be forgotten that all these factors *existed* already before the construction of the railroads, but that they could never have been effectively utilized without the latter.

Especially characteristic instances, showing the effect of railroads upon the economic growth of the country, are given in the accompanying diagrams which show the increase of the railroad mileage, the population and crops in those regions of the United States and Canada in which railroad construction began to develop comparatively late.

The first diagram (Fig. 1), which consists of two parts, shows the growth of railroad mileage and the increase of population in the states which had no railroads at all or almost none in 1860. The first part of the diagram shows the development of the railroads and the increase of the popula-

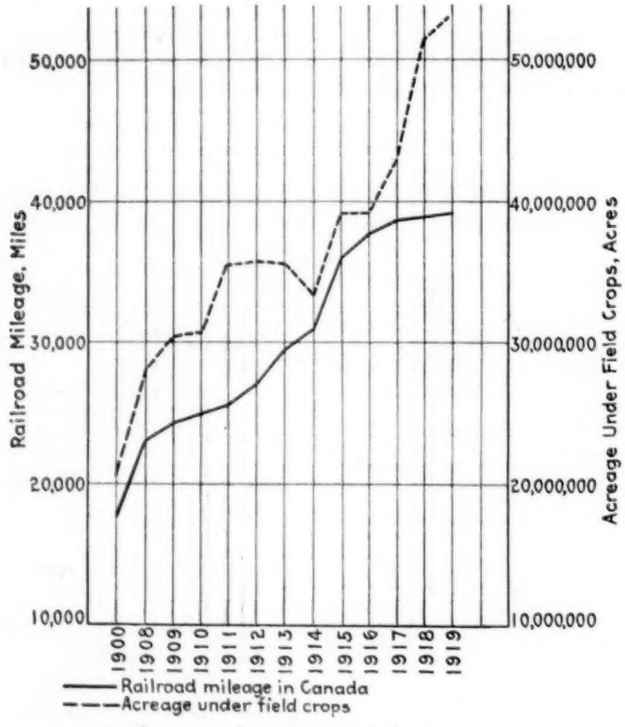


Fig. 4

tion in a group of states that had no railroads at all in 1860. To this group belong Colorado, Idaho, Arizona, Kansas, Minnesota, Montana, Nebraska, Nevada, New Mexico, North and South Dakota, Oklahoma, Oregon, Utah, Washington and Wyoming.

The second part of the same diagram shows the development of the railroad net and the growth of the population in the above mentioned states, together with those states in which more important railroad lines had at that time only commenced to make their appearance. So, for instance, California had in 1860 only 23 miles of railroad, Arkansas 38 miles, and the immense state of Texas, with a territory 5½ times larger than that of the state of New York, had only 307 miles. Studying this diagram we will find the increase in the population to be nearly parallel with the increase of railroad mileage. Quite naturally, the increase in the population, which was caused by increased railroad facilities, created in turn a new incentive for further railroad construction.

Increased Railroad Mileage Brings Greater Grain Production

Figs. 2 and 3 show the relation between the increase in the length of the railroads and production of grains in the North Central part of the country and in the Western states from 1850 till 1910.

The figures of the last census for all the states of this group were not yet published at the time this diagram was prepared.

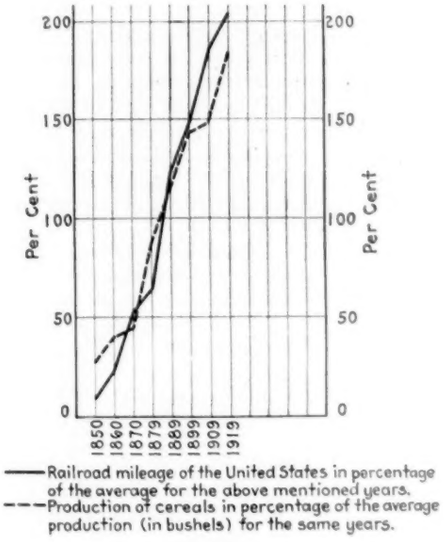
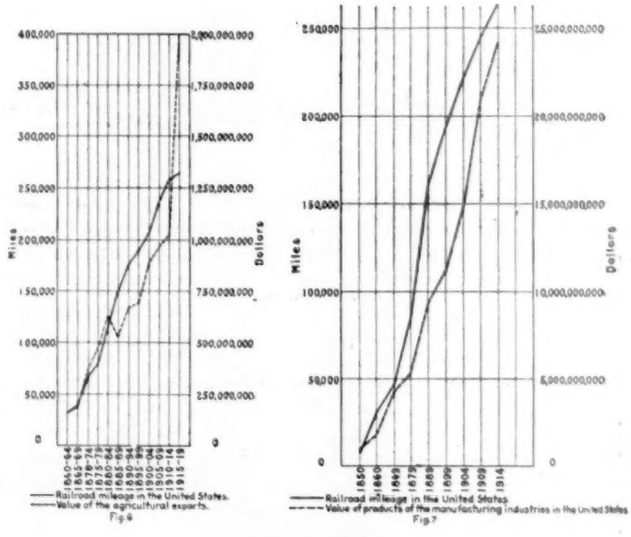


Fig. 5

The group of the North Central section is composed of the following states: Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North and South Dakota, Ohio and Wisconsin. The Western group embraces Mon-


Miles
Dollars
Railroad mileage in the United States.
Value of the agricultural exports.
Fig. 6
Railroad mileage in the United States
Value of products of the manufacturing industries in the United States
Fig. 7

Figs. 6 and 7

tana, Idaho, Wyoming, Colorado, New Mexico, Arizona, Utah, Nevada, Washington, Oregon and California.

In both the North Central and Western sections of the country the development of the cultivation of grains followed almost parallel the increase in railroad mileage. This could be seen even more clearly from a diagram showing the railroad mileage in the United States for the same years in percentage of the average for the above mentioned years in

relation to cultivation of grains in percentage of the average for the same years. This diagram as the others showing these percentages have been omitted for future publication.

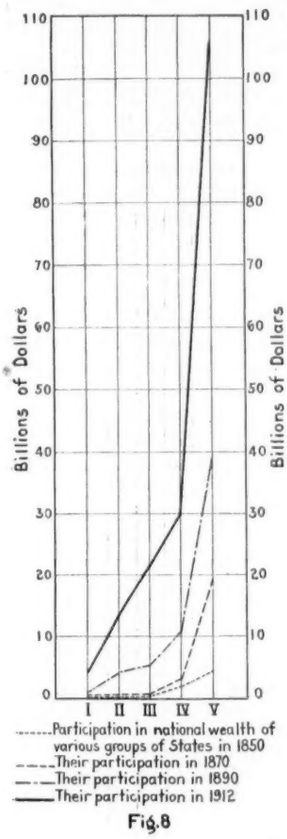

Billions of Dollars
I II III IV V
Participation in national wealth of various groups of States in 1850
Their participation in 1870
Their participation in 1890
Their participation in 1912

Fig. 8

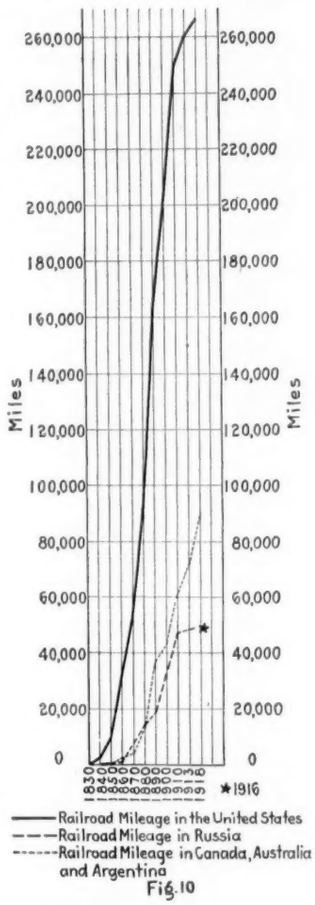


Fig. 10

Figs. 8 and 10

A similar close interdependence between the increase in railroad mileage and the growth of agriculture is shown by Fig. 4, giving the figures for railroad mileage and the increase in the area under field crops for the *whole* of Canada since 1900, i.e., from the time railroad building in Canada had begun to expand rapidly, traversing many immense territories which had had no railroads previously. It was only owing to the enormous increase in railroad mileage during the last decade that Canada was enabled to utilize the splendid opportunities in the world market for agricultural products after 1915. From 1900 to 1919 the railroad mileage of Canada increased more than 21,000 miles, having grown from 17,660 miles in 1900 to nearly 39,000 miles in 1919.

Passing by a multitude of important facts disclosed by the detailed study of the development of one or another branch of economic life in the several sections of the United States and Canada following railroad development, I shall give here only three diagrams which tend to show the influence of the railroads upon the development of the economic life of the United States as a whole.

The first of these diagrams, Fig. 5, shows the relation between the growth of railroad mileage and the increase in grain crops in the United States. Looking over this diagram we will see that the grain crops, calculated in percentages of the average for the years mentioned in the diagram, had been fluctuating almost parallel with the increase of railroad mileage.

Our Importance as Exporter of Food-stuffs Increases

The same holds true for Fig. 6, showing the value of exports of agricultural products from the United States. The only seeming exception are the years following the outbreak of the World War. I say "seeming" because actually the increase in the value of exports for the period 1915-1919 was caused by inflated war prices. Taking in consideration that the average inflation for the five year period 1915-1919 amounted to approximately 50 or 60 per cent, it will be seen that even during the period from 1910 to 1919 the growth of exports actually followed the increase in railroad mileage for the last decade. Not to mention the fact that if

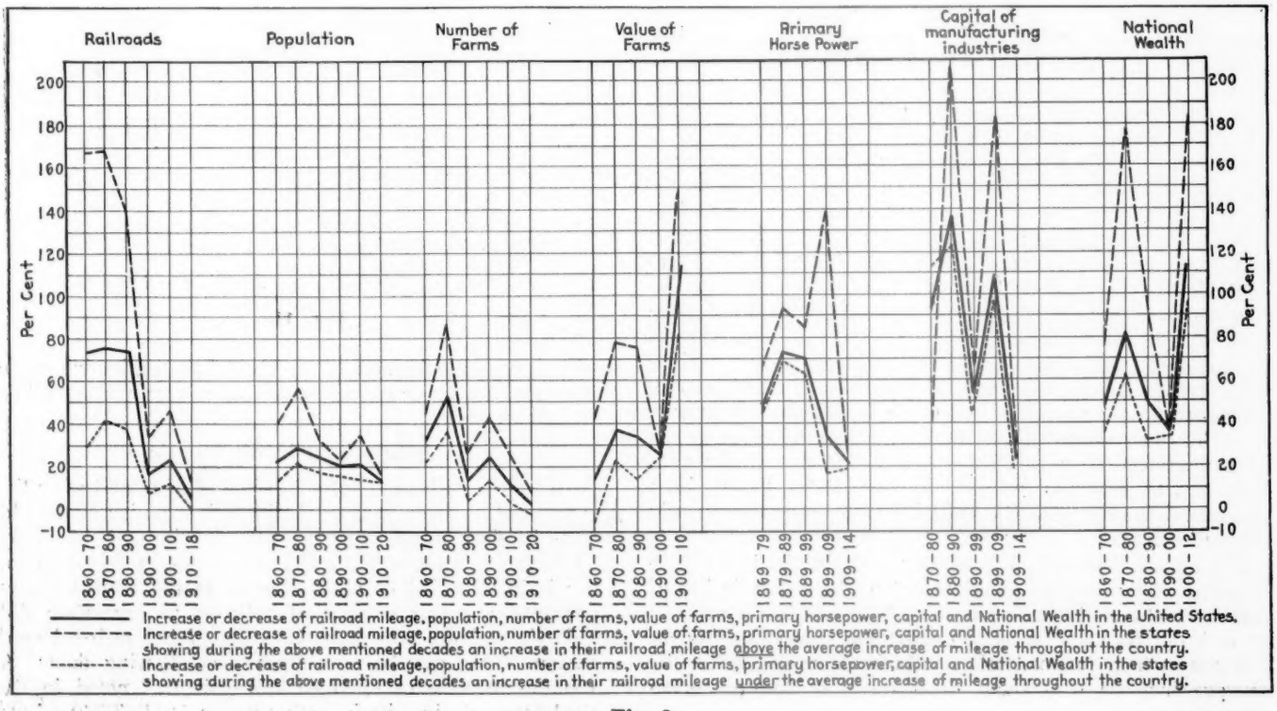

Railroads
Population
Number of Farms
Value of Farms
Primary Horse Power
Capital of manufacturing industries
National Wealth
Per Cent
Increase or decrease of railroad mileage, population, number of farms, value of farms, primary horsepower, capital and National Wealth in the United States.
Increase or decrease of railroad mileage, population, number of farms, value of farms, primary horsepower, capital and National Wealth in the states showing during the above mentioned decades an increase in their railroad mileage above the average increase of mileage throughout the country.
Increase or decrease of railroad mileage, population, number of farms, value of farms, primary horsepower, capital and National Wealth in the states showing during the above mentioned decades an increase in their railroad mileage under the average increase of mileage throughout the country.

Fig. 9

the United States had not had a highly developed system of railroads, this country could, of course, never have played such a tremendous part, both in the prosecution of the war as well as in the adjustment of the world's economic life after the war.

Other Industries Also Benefit

No less marked has been the influence of the railroads upon the growth of the United States manufacturing industries, as will be noted from Fig. 7. In studying this diagram we will see that the value of the products of American manufacturing industries also kept pace with the increase of railroad mileage.

Wealth Increases Most in States Where Railroads Increase Greatest

Considering this powerful influence of the railroads upon the development of agriculture, industry and trade, it is not to be wondered at if the national wealth of the country increased most rapidly in those states which had the most railroads and other means of communication. This is perfectly obvious from Fig. 8, which shows the increase in the national wealth from 1850 to 1912, in accordance with the investments made by each particular group of states in railroads, as these investments are shown by the railroad mileage per hundred square miles operated in 1912 in each state.

The states are ranked in accordance with the railroad mileage per hundred square miles of their territory in 1912. The first group embraces the following states: Wyoming, Arizona, Nevada, Utah, New Mexico and Oregon. The second group is composed of Montana, Idaho, California, South Dakota and Colorado. The third group embraces Texas, North Dakota, Maine, Washington, Nebraska, Florida and Oklahoma. The fourth group consists of Kentucky, Tennessee, Mississippi, Arkansas, Alabama, North Carolina, Minnesota, Kansas, Virginia, South Carolina, Vermont and Missouri. The fifth group embraces Georgia, Louisiana, Wisconsin, New Hampshire, Maryland, Michigan, West Virginia, Delaware, Iowa, New York, Rhode Island, Indiana, Connecticut, Illinois, Ohio, Pennsylvania, Massachusetts, New Jersey and District of Columbia. These groups were formed so as to allow each as far as possible an equal area. In dividing the states by groups, in accordance with the absolute investments in railroads, street car lines, shipping, telegraphs, telephones, etc., as well as in grouping them in accordance with the investments for these purposes per 100 square miles, or in accordance with the mileage of railroads per 100 square miles in each state, as shown in diagram 8, we obtain the same picture, although the rank of the various states will be somewhat changed. In these calculations the figures given are those for the taxable wealth of the nation.

Studying this diagram we will observe that in the first group of states, where the investments in railroads up to 1912 have been lowest, both the absolute amount of the national wealth and its increase from 1850 to 1912 have been comparatively insignificant. And, on the contrary, in each of the epochs shown, the national wealth was mainly concentrated in the fourth, and especially the fifth group, containing the states which had made the largest investments in railroad development and in the advance of other means of communication, particularly ports for foreign trade; and, moreover, most of the railroads in those states, having been operated for many decades, their influence was consequently more pronounced.

Still clearer can the close relation between the increase in the railroad net and the development of the economic life of the United States be seen from Fig. 9, drawn in such a way as to bring forward for each decade the states showing an increase in their railroad mileage, both above and below the average increase throughout the country during the given decade.

This diagram shows that in each decade that group of states which showed an increase of railroad mileage above the average increase for the entire country, had a considerably larger increase in population, number of farms, value of farms, primary horse power used in industry, capital invested in manufacturing industries and national wealth.

No matter how severely we may condemn the mistakes, abuses, corruption and even criminal acts committed by one or the other promoter or financial group standing at the head of various American railroads, we should still never overlook the undeniable fact that in spite of all such mistakes and abuses the railroads have created both the economic

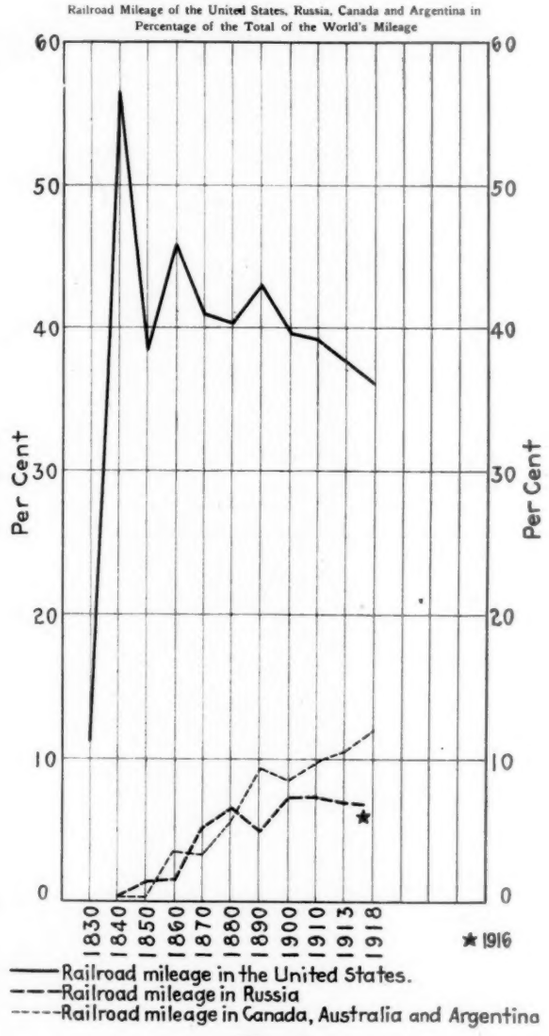


Fig. 11

wealth and political power of the United States, having made this country for many years to come the arbiter of the world's economic destinies.

A Comparison With Russia

As a Russian whose country has both during and after the war suffered so severely from the inefficient policy of the old regime in developing transportation facilities, I can only envy the achievements of the United States in this domain. For within a period of about five years the United States constructed a larger amount of railroad mileage than did Russia throughout more than 75 years of her railroad construction. This can be seen from the following data: A maximum increase of operated railroads was noted in the United States during the following years: 1871, 7,379 miles;

1886, 8,018 miles; 1881, 9,846 miles; 1882, 11,569 miles and 1887, 12,876 miles. The total increase in these five years was 49,688 miles. The total railroad mileage of Russia, however, equalled in 1916 only 48,955 miles.

A Note of Warning

Figs. 10 and 11 will, however, demonstrate that even the United States should not regard this problem as finally solved. These diagrams show quite clearly that agricultural production as well as that of all kinds of raw materials, both in the United States as well as in Russia, which were before the war the main sources of supply for such products in the world market, are in great danger from the competition of Canada, Australia and Argentina, where the railroad mileage during recent years, particularly when expressed in percentage of the total length of railways in the world, has been growing much more rapidly than the railroads of the United States.

To illustrate this fact, it will suffice here to point out that in the beginning of the forties of the nineteenth century the railroad mileage of the United States exceeded 56 per cent of that of the whole world, while the railroads of Canada, Argentina and Australia, were then almost equal to zero. In 1918, on the contrary, the railroad mileage of Canada, Argentina and Australia, growing rapidly had already reached 12 per cent of the world's total mileage and almost one-third of that of the United States, whereas the United States ratio, gradually decreasing, had fallen to 36 per cent of the world's total.

If that old famous saying "Procrastination is death" has any meaning at all, then it is undoubtedly true in the domain of transportation, since at this epoch of sharp competition for the world markets no rapid progress is possible unless extensive and continuous improvements in transportation are made.

How slowly the railroads of the United States have been growing in recent years may be seen from the fact that from 1914 to 1918 the railroad mileage of the country increased only 686 miles, i. e., on an average of 172 miles, or 0.06 per cent annually, whereas the average annual increase of the operated railroad mileage for the period from 1900 to 1914 amounted to 4.613 miles or 2.3 per cent. From 1916 to 1918 the operated railroad mileage, as a result of discontinuance of the operation of some lines, even decreased considerably (from 266,381 miles in 1916 to 264,233 miles in 1918), so that the total mileage about the middle of 1921 was probably smaller than that of 1916.

The United States, therefore, if it wants to retain the economic and political supremacy it has won in recent years, will again have to devote a great deal of attention to the development of means of communication which have suffered severely both from the results of not always successful internal legislation as well as from the war and the terrible complications it has caused throughout the world.

As far as Russia is concerned, I hope that after a strong and really democratic government will have replaced the Soviet rule, the long and splendid experience of America in railroad construction and American skill and capital will assist my country, not only in restoring its old and now badly deteriorated railroad sytem but also in the building up a large new mileage—thus giving a powerful impulse to the development of Russia's tremendous natural resources.

Railroad Securities Bill Reported to Senate

Committee Passes Favorably on Winslow Bill, Which Has Been Approved by House

CHAIRMAN CUMMINS of the Senate committee on interstate commerce on October 27 presented to the Senate the favorable report of the committee on the bill to provide for the sale of the railroad securities held and to be acquired by the Railroad Administration (the so-called funding bill) with amendments made by the committee to the bill as passed by the House. With the report was a statement by Director General Davis estimating the amounts to be paid to the carriers as of October 1, if all the remaining settlements could have been made as of that date, as $779,851,593.55, of which $279,851,593.55 represents the amount that would be paid in final settlement if $500,000,000 of the indebtedness of the roads to the government for additions and betterments were offset against the amounts owed by the government to the roads. Up to October a total of $17,715,840 had been paid to the roads in settlements and $60,925,000 of additions and betterments had been funded, exclusive of the $381,000,000 equipment trust.

On July 27 Senator Townsend introduced a bill (S. 2337) substantially similar to the bill H. R. 8331. That bill was considered by the committee on interstate commerce, and on August 19 it was reported favorably with amendments. Since the report of the Senate bill, the House passed the bill (H. R. 8331) covering the same subject. It seemed wise to the committee that the Senate should act upon the House bill for the reason that there was no other practicable way in which the two houses could act upon the same bill. The committee therefore took up the House bill, and the report explains its action thereon.

WASHINGTON, D. C.

The measure has been misnamed and misapprehended both in the incidental discussions which have taken place upon the floor of the Senate and in the newspapers.

It is generally referred to as the funding bill or refunding bill, and it has been treated both in debate and in the public press as a bill which proposed a plan for funding or refunding certain of the indebtedness which, during the period of federal operation of railroads, was created from the railroads to the government. Nothing could be more erroneous than this idea. The bill has nothing whatever to do with the authority to fund indebtedness of any kind or character. It neither enlarges nor diminishes the authority of the President in that regard. The matter of funding was completely covered in the Transportation Act, 1920.

This is the existing law upon the subject of funding indebtedness due from the carriers to the United States, and neither the Senate bill now upon the calendar nor the bill which we are now reporting makes any change whatever in the present law upon the subject. The sole purpose of this bill and its only possible effect is to confer upon the President the authority to sell the securities which have come, or may hereafter come, into his hands in his dealings with the railroads, in order that he may be able to pay to the railroads whatever sums may be found to be due to them upon the final accounting which, under the Transportation Act, 1920, it is his duty to reach as speedily as possible. It is obvious that the extent to which he has funded, or may hereafter fund, indebtedness due from the railroads to the government for expenditures made for additions and betterments during federal operation and properly chargeable to capital account will affect the amount due and immediately payable to the railroads, but with respect to his discretion in funding or declining to fund within the limits of the law any such indebtedness this bill has no application.

The two questions which this bill presents are: First, shall the President be authorized to sell some or all of the securities which he has taken from the railroads, without loss to the government

and without recourse, in order to pay admitted indebtedness to the railroads; and, second, whether the War Finance Corporation shall be authorized to buy from the President a limited amount of these securities.

It is difficult to conceive any reasonable objection to these proposals. Congress has already provided for the system of accounting and the methods through which the amounts, if any, due from the government to the railroads shall be ascertained. When the amounts are thus ascertained it may be assumed they ought to be paid. If they are paid, the money must come either from the Treasury or from money derived from the disposition of the securities in the hands of the President. With these alternatives, one of which we must adopt, the propriety of raising the money by sale of the securities without loss to the government and without recourse does not admit fair difference of opinion. Before leaving this subject it may be well to remark that the President already has the authority to sell the securities referred to in paragraph (c) of section 207, Transportation Act, 1920, known as car-trust certificates, this authority having been given to him in an act approved November 19, 1919, and further to suggest that under this authority the President has already disposed of such securities to the amount of about $100,000,000.

Amendment Recommended

With these general observations we proceed to the amendments which the committee recommends to the House bill (H. R. 8331).

The first amendment is as follows:

The President is hereby authorized to sell any bonds, notes, or other securities acquired by him either before or after this section takes effect, under authority of the Federal control act, the Transportation Act, 1920, or the act entitled "An act to provide for the reimbursement of the United States for motive power, cars, and other equipment ordered for railroads and systems of transportation, and for other purposes," approved November 19, 1919; and the proceeds of all bonds, notes, or other securities sold by the President shall be a fund to be used by the President for the purposes described in section 202 of the transportation act, 1920. Any balance not so required shall be paid into the Treasury of the United States as miscellaneous receipts. Any such sale or sales must be made at a price which will save the United States from loss in the transaction and without recourse.

This amendment is intended to give to the President the authority to sell the securities to any person or corporation and relieve him from the restriction of selling only to the War Finance Corporation. There can be no possible good accomplished in limiting him in making such sales to a single organization, and that is especially true when we consider that the War Finance Corporation is purely a governmental body. He has already sold $100,000,000 of the car trust certificates under the power heretofore mentioned in the absence of any authority on the part of the War Finance Corporation to buy, and it may very well be that he will find it desirable to sell other securities in a like manner. It will be noted that this amendment specifically provides that the sales must be made at a price which will save the United States from a loss in the transaction and without recourse.

Second Amendment

The second amendment is as follows:

In making settlements with the carriers under the Transportation Act, 1920, no payment or allowance shall be made to any carrier on account of the so-called inefficiency of labor during the period of Federal control; and no final settlement between the United States and any carrier shall be made which does not forever bar such carrier from setting up any further claim, right, or demand of any kind or character against the United States growing out of or connected with the possession, use, or operation of such carriers' property by the United States during Federal control, except a claim specified in clauses (1), (2), or (3) of paragraph (b) of section 2 hereof.

This amendment does two things. The important differences between the House text and the amendment are that the House bill deals with the use of any fund or moneys available under any act, and declares that no payments or allowances shall be made from any fund or moneys on account of the so-called inefficiency of labor during the period of federal control. The amendment puts this prohibition immediately upon the President and the director general and declares that in making settlements with the carriers no allowance shall be made on account of the so-called inefficiency of labor. It can not be the intention of Congress to attempt to deny to any carrier its constitutional right of resorting to the courts for such relief as the laws of the country may afford them. We can impose such restrictions as are thought best upon the President and the director general in making settlements, but we ought to go no further. It is thought, also, that the effect of the House text would be to forbid the director general from making partial payments to any given railroad when the final settlement is delayed, and it is plain, from the government standpoint that something is due to it.

Second, the House text provides that no settlement shall be made between the United States and any carrier which does not forever bar such carrier from setting up any further claim, rights, or demands of any kind or character against the United States growing out of or connected with the possession, use, or operation of such carrier's property by the United States during the period of Federal control.

The amendment makes an exception in the following words: "except a claim specified in clauses (1), (2), or (3) paragraph (b) of section 2 hereof." It is believed that the failure on the part of the House to make these exceptions was due to an oversight. It will be remembered that the House bill provides as follows:

(b) Every claim of a carrier against the United States arising out of or incident to Federal control shall, if not filed within one year after this subdivision takes effect, be thereafter barred, and the carrier shall be considered as having waived the claim.

There are certain claims which the carriers may have against the government which can not be presented within a year, and these claims have, according to the uniform practice of the director general, been excepted from all the final settlements which he has hitherto made with the railroads, and there have been many of them. These claims may be in a general way described as claims arising in favor of third persons, some of which may finally result in liens upon the railroad property.

The third amendment is of a similar character, and excepts the claims which have been already described from the operation of paragraph (b) of section 2, which bars all claims not presented within one year.

The fourth amendment strikes from section 3 of the bill, page 3, line 2, the words: "and the President may sell to the corporation." The first amendment, already mentioned, gives to the President the authority to sell securities to any person or corporation, and therefore when we come to deal with the War Finance Corporation act it is unnecessary to provide that the President may sell to that particular corporation.

Appendix to Report

Appended to the report is the following:

Statement Furnished by Director General of Railroads Showing Definitive Securities Taken and Held

Definitive securities on hand Aug. 1, 1921, shown on page 86, Committee on Interstate Commerce, S. 2337, part 2.		$438,577,238.08
Additional securities taken up to and including Oct. 1, 1921:		
Equipment trust certificates	$11,590,800	
Other securities	3,550,000	
		15,140,800.00
Total		$453,718,038.08
Less securities sold up to and including Oct. 1, 1921:		
Equipment trust certificates		99,662,000.00
Definitive securities on hand Oct. 1, 1921		$354,056,038.08

Claims Settled to October 1, 1921

Total claims of carriers settled	$387,017,099.12
Amount paid in settlements	117,715,840.43
Percentage paid in settlements	30.416
Mileage of roads settled	90.944

Additions and Betterments

Gross advances for additions and betterments	$1,144,681,582.39
Less equipment trust (engines and cars)	381,649,957.12
Net additions and betterments, advances not including equipment trust	$763,031,625.27
Less additions and betterments funded	60,925,000.00
Balance	$702,106,625.27
Amount to be funded not to exceed	500,000,000.00

Estimated Amounts to be Paid Carriers October 1, 1921

Final settlements, exclusive of funding	$279,851,593.55
Amount to be paid by funding not to exceed	500,000,000.00
Total	$779,851,593.55

Amount of Money Needed

In a letter to Senator Cummins, Director General Davis said that it is somewhat difficult to estimate the amounts to be paid carriers in final settlement. In testifying before the committee on August 9, 10, and 11, he had stated that the Railroad Administration then had cash available aggregating $149,000,000, and that it would require $200,000,000 in addition to complete the settlements, excluding any general funding of additions and betterments. Since that date it had paid out in final settlements, up to October 1, about $70,000,000, so that his estimate is that it will require to complete the payment of the obligations of the Railroad Administration something in excess of $279,000,000, to which must be added whatever amount of the additions and betterments debt is funded.

Plan for Electrifying Sections of 11 Railroads

Superpower Report Provides for Consolidation of Power Supply in Region Between Boston and Washington

A REPORT called the Superpower Survey will be transmitted to the President today (November 5) by Secretary of the Interior Fall. It is the result of an investigation of the possible economy of fuel, labor and material resulting from the use of a comprehensive system for generating and distributing electricity to transportation lines and industries. The investigation was made by a staff of engineers working under the direction of W. S. Murray, consulting engineer, New York; in preparing the report they have endeavored to show how the economies of a power system on so large a scale will affect not only coal, but capital expenditures as well, and especially the output of human energy.

The plan provides for the interconnection of a large number of existing plants in the area shown in several of the illustrations by high voltage transmission lines. These lines would include and be extended to other points at which large power plants could be located advantageously at the mouths of mines, at tidewater, or along rivers suitable for hydro-electric developments. It would be necessary to derive more than 80 per cent of the power from coal. The maximum size of steam-electric stations has been fixed at 360,000 kilowatts. This limit has been determined by considering on the one hand the ability to transmit energy away from the plant and on the other the hazard incident to the possibility of destruction through unusual catastrophe. A steam pressure of 300 lb. would be used at the turbine throttle with a superheat of 230 deg. F. Proposed coal delivery routes are shown in one of the illustrations and six months' storage capacity for each plant is recommended.

Hydro-electric plants will be limited in size by steam flow and storage capacity. The principal developments are located on nine rivers, but as proposed the estimates for 1925 and 1930 can be justified only if they are included in an interconnected system, as otherwise their output cannot be economically absorbed by the power market.

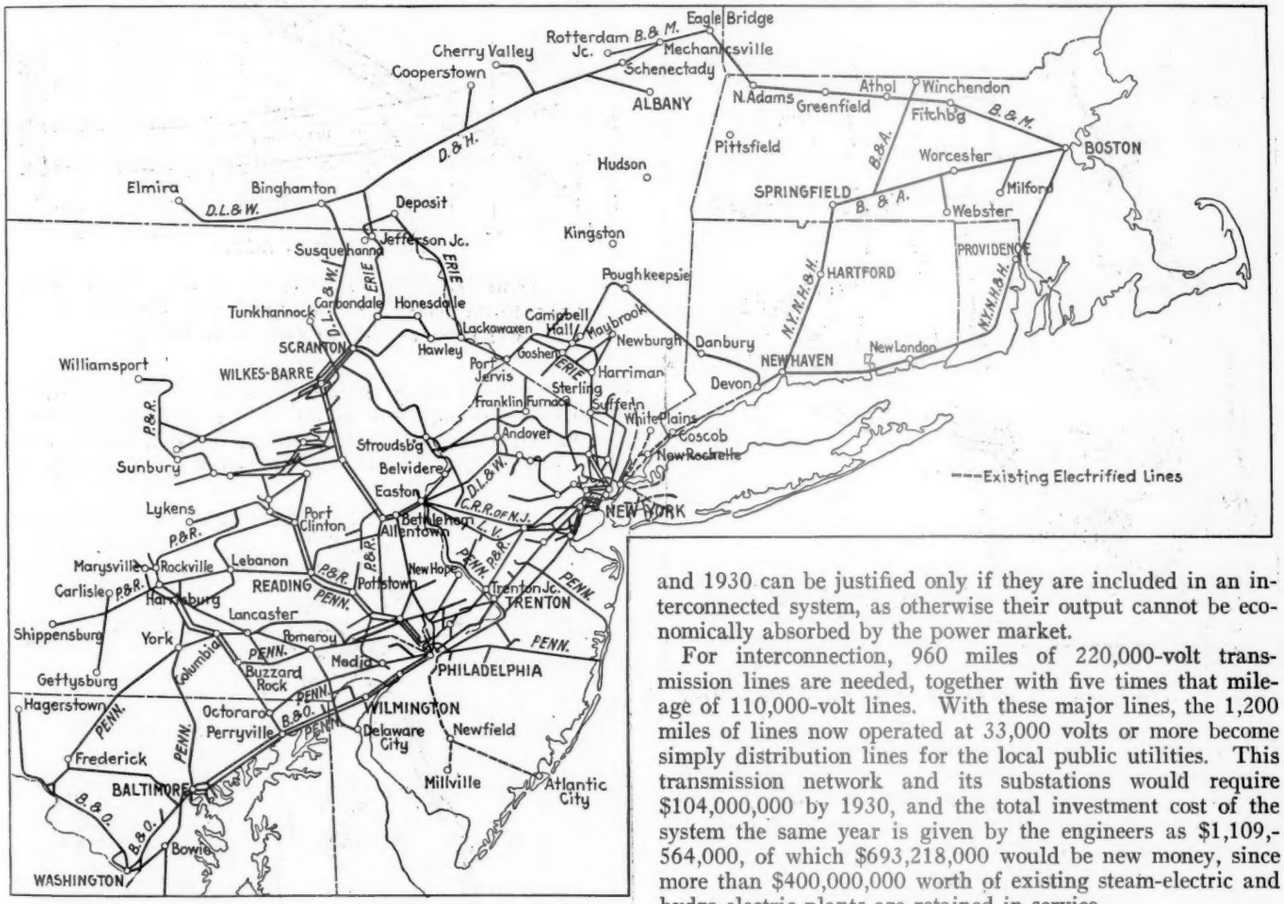


Fig. 1. Map Showing Class 1 Railroads Within the Superpower Zone for Which Electrification Is Recommended

For interconnection, 960 miles of 220,000-volt transmission lines are needed, together with five times that mileage of 110,000-volt lines. With these major lines, the 1,200 miles of lines now operated at 33,000 volts or more become simply distribution lines for the local public utilities. This transmission network and its substations would require $104,000,000 by 1930, and the total investment cost of the system the same year is given by the engineers as $1,109,564,000, of which $693,218,000 would be new money, since more than $400,000,000 worth of existing steam-electric and hydro-electric plants are retained in service.

Electrification of Heavy Traction Railroads

The section of the report devoted to the electrification of the heavy-traction railroads was compiled under the direction of Cary T. Hutchinson and N. C. McPherson; it presents results of even more general interest than the detailed analysis of the industrial use of electric power. The question of railroad electrification must be decided according to density of traffic; on this basis of the 36,000 miles of main line, yards, and sidings in this superpower zone, about 19,000 could be profitably electrified. This electrification would cost nearly half a billion dollars, but it is estimated that it would save from 11 to 19 per cent on the investment, or an average of 14 per cent per year. The following paragraphs

contain an outline of the salient points brought out in this part of the report:

A consolidation of the roads within the district in question is first suggested which would make it possible to reroute much of the traffic as now handled. Unified operation by electricity would give much better conditions than any that could possibly be attained under unified operation by steam. There would be a new motive power, in which all units or parts designed for similar service would be identical and interchangeable. There would be a pooling of all power, with great reduction of reserves. Repair shops would be consolidated, and maintenance would become a standardized manufacturing job. Track capacity would be greatly increased, and certain tracks would be allocated to freight or passenger service exclusively. All freight trains would be run on schedule; the average speed would be more nearly the same and would be increased to at least 12.5 miles an hour needed to avoid the present punitive overtime payments. Enginehouse facilities would be much simplified by consolidation.

The great expense of any large increase in trackage

Fig. 2. Isolated Industrial Plants in the Superpower Zone

should of itself force electrification; the total cost 20 years hence will be less if electrification is begun now than the cost of the added track and terminal facilities necessary under steam operation to provide for the inevitable 100 per cent increase in traffic within that time.

Motive Power

The entire freight service in the superpower zone can be handled by electric freight locomotives having two articulated two-axle trucks, each carrying two motors geared to the axle, the mounting being essentially the same as that in a number of locomotives now in use and similar to the usual street-car mounting. There would be two classes of locomotives of this type—a light one carrying 80 tons on drivers and having a continuous drawbar pull of 22,000 lb. at 25 miles an hour, and a heavy one carrying 110 tons on drivers and having a continuous drawbar pull of 30,000 lb. at the same speed. These units can be combined in any reasonable number; the total load on drivers can be made equal to 80,110,160,190,220 tons, or as much more as may be desired, being limited only by the strength of the draft rigging. A train can, of course, be double-headed, and a total tractive pull up to the maximum now in use can be obtained, with at least double the present speed.

For passenger service a similar arrangement would be used; that is, two articulated two-axle trucks, with one motor geared to each axle. The motors may be practically

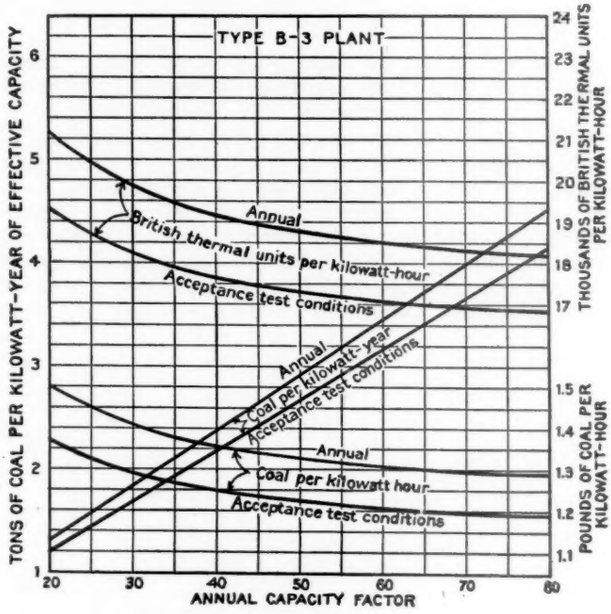


Fig. 3. Estimated Unit Performance of One of the Base-Load, Steam-Electric Plants; Plant Uses Bituminous Coal, Stokers and 20-Tube High Boilers

the same as those in the freight locomotives, the only difference being a change in gear ratio. The passenger locomotive, however, would have leading and trailing trucks, with either two or four wheels, and the total weight would be

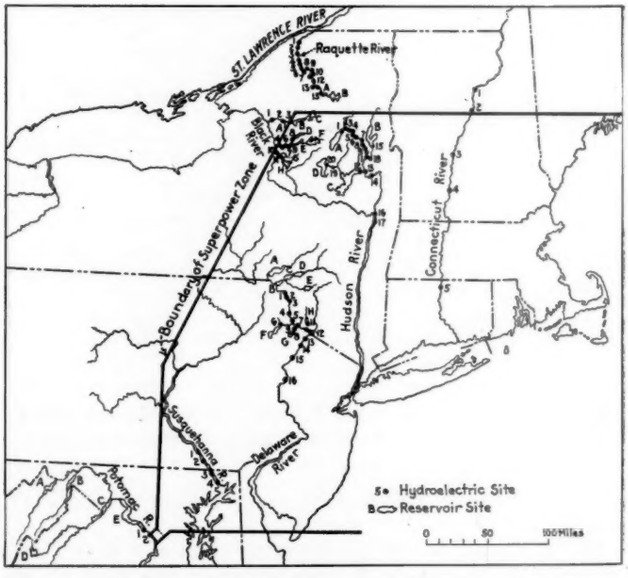


Fig. 4. Principal Hydro-Electric Resources of Superpower Zone

redistributed. This passenger locomotive would be of two weights, the light one having 60 tons on drivers, and the heavy one 90 tons. These also may be combined, like the freight locomotives.

For the switching locomotives, one size will be adequate, with 70 to 75 tons on drivers, of the same type as the freight locomotive. Substantially the same frame and running gear can be used, with motors of less capacity.

All three types of locomotives will have the usual overload capacity, and all will be able to operate in starting and accelerating at 25 to 30 per cent adhesion. These suggested sizes and types of locomotives can, of course, be varied greatly without sacrificing the advantage of unified electric operation, but identity of types for the same service throughout the superpower zone is essential.

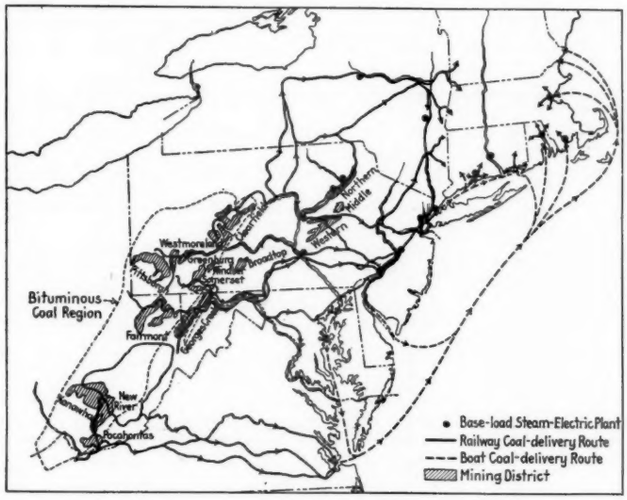


Fig. 5. Location of Principal Coal-Delivery Routes from Bituminous Regions to Base Load Steam-Electric Plants in 1930

The only two systems that are applicable to general traction within the superpower zone are the 3,000-volt direct-current system and the 11,000-volt (or higher) alternating-current system, both with overhead distribution circuits and rail return. Both of these systems are in successful use, and both can no doubt be designed and constructed to give satisfactory service in the zone.

Systems of Electrification

In order to avoid some uncertain elements in the estimates of the cost of the alternating-current system it was decided to base all estimates, both of operation and of construction, on the 3,000-volt direct-current overhead system. Substantially the same results in money could, however, be obtained with the alternating-current system, certain gains being offset by certain losses.

It was evident at the outset that it would not be adequate to study the roads as units, but that a study should be made of the operating divisions of the railroads. A study of a railroad system as a whole, even if it lay entirely within the zone, would yield only average results, which might make a poor showing, whereas some of the divisions treated separately might make a good showing. It was, therefore, decided to ask each of the Class 1 railroads within the superpower zone, of which a list is given below, to answer questions asking for certain fundamental data as to roadbed, equipment and traffic. This information, as with all other information sought, was to cover the year 1919.

CLASS 1 RAILROADS WITHIN THE SUPERZONE

Boston & Maine	Erie
Boston & Albany	Delaware, Lackawanna & Western
New York, New Haven & Hartford	Lehigh Valley
New York Central	Central of New Jersey
Delaware & Hudson	Long Island
Ulster & Delaware	Pennsylvania
New York, Ontario & Western	Philadelphia & Reading
Lehigh & New England	Western Maryland
Lehigh & Hudson River	Baltimore & Ohio

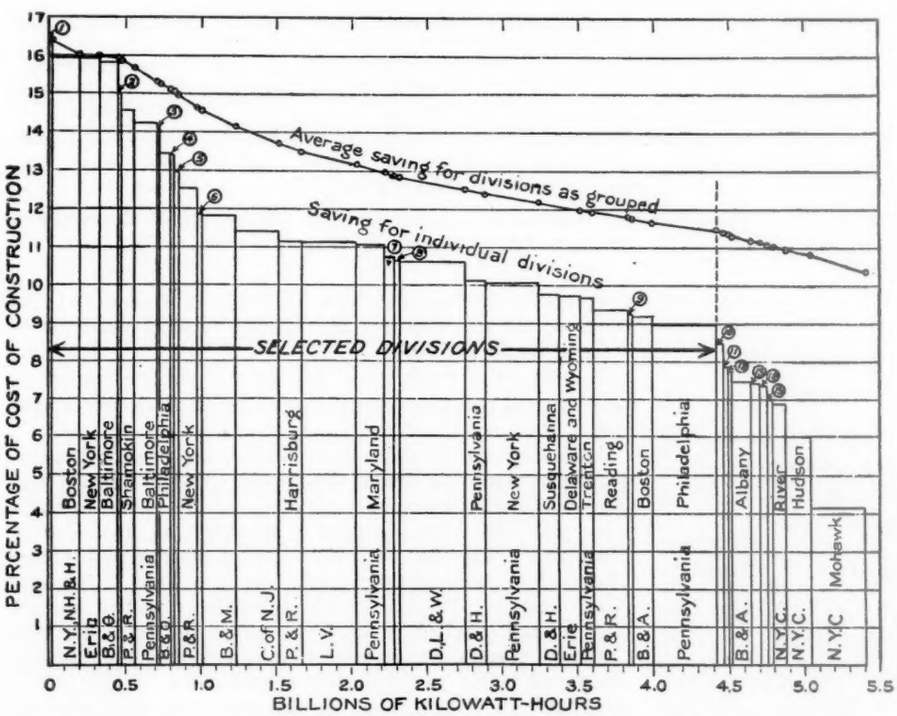


Fig. 6. Saving Effected by Electrification of Heavy-Traction Railroads in Percentage of Construction Costs, Not Including Saving in Wages

In addition to the data from the railroads, two large companies, the General Electric and the Westinghouse, were asked to prepare estimates of cost of substation equipment, of electric locomotives, of catenary construction, and of other facilities—all as of the year 1919. Similar data were also asked of the Ohio Brass Company and one or two other companies.

Electrical Energy Required

The electric energy required for the railroads is determined from the records of lines already electrified, with proper allowance for variations in the conditions of operation, and from calculations based on the profile and the alinement of the roads considered and the efficiency of their locomotive and distribution systems.

In fixing the units of energy for the different operating divisions much weight is given to the results of the New Haven service modified as required by profile and alinement under examination.

Other records of electric energy for locomotive-drawn trains, both freight and passenger, were obtained from the

Chicago, Milwaukee & St. Paul, New York Central and the Pennsylvania. Tables published in the report show the amount of power used on these roads for freight, passenger and switching service.

Electrical Energy Required

The second method of determining electric energy required consists in calculating, from profile and alinement, the work due to normal train resistance and adding to this the net work done against gravity, plus the work due to curvature, plus the work due to acceleration.

The quantity of coal burned by a steam locomotive necessary to do one kilowatt-hour of work at the rim of the drivers is estimated at 7.5 lb. Equivalent coal for electric locomotives is uniformly taken at 2 lb. per kilowatt-hour for energy delivered at the substation. All losses of energy in transmission and conversion from the power station to the substation are included in this figure. To make the costs justly comparable throughout, a unit price was adopted for railroad coal in each section: the cost per ton as thus fixed for the several sections of the zone is $5, $5.50 and $6 for the south, central, and northern sections, respectively. These costs include the prorated cost of fuel and water stations.

It is assumed that the railroads will purchase electrical energy delivered at high pressure at substations on or near the railroad right-of-way at the flat rate of one cent per kilowatt-hour.

Maintenance of the electric distribution systems, is taken at $600 per mile for main track and $400 per mile for yard track. The cost of operation and maintenance of substations is based on $1.50 per kilowatt per year of capacity, giving 0.7 mill per kilowatt-hour for a capacity factory of 25 per cent.

It is assumed that there will be an increase in ton-miles per electric locomotive-hour of 33 per cent and a consequent reduction in crew wages per ton-mile of 25 per cent. For passenger service no data are at hand; a general consideration of the subject does not indicate a material saving in wages necessary on account of train crews and therefore none is assumed.

It is estimated that the electric switchers will do 50 per cent more work per hour than the steam switchers, and that consequently the wage account for the same service will be reduced by 33 per cent.

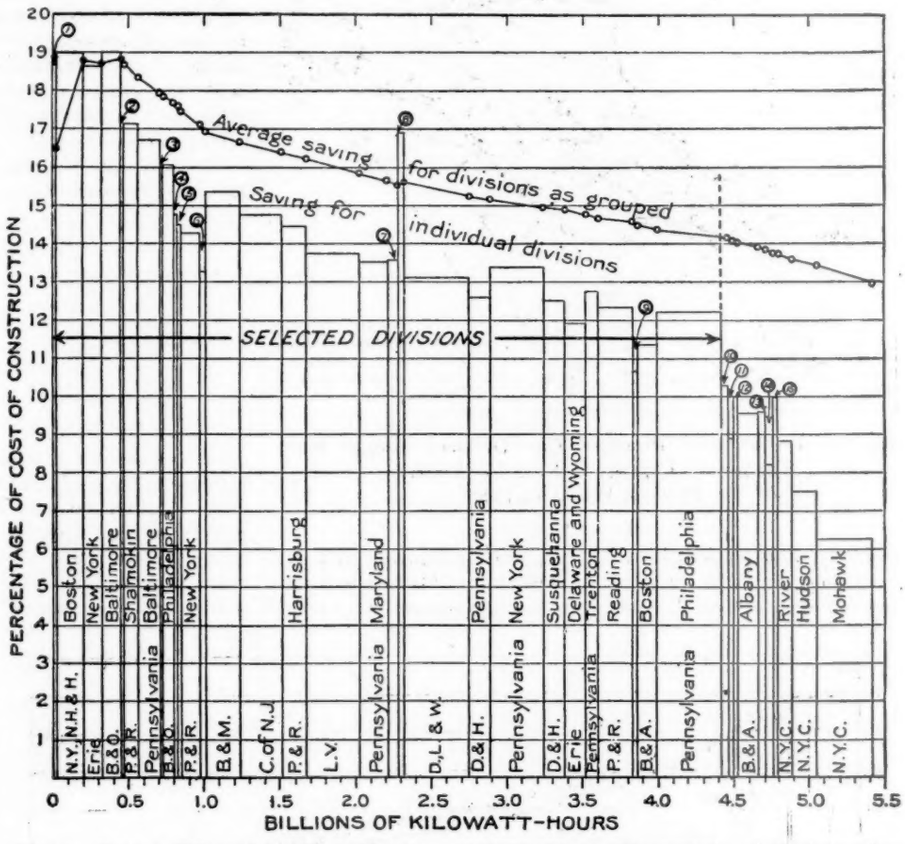


Fig. 7. Saving Effected by Electrification of Railroads, in Percentage of Construction Cost, Including Saving in Wages

TABLE NO. 1

COST OF CATENARY SYSTEM AND ELECTRIC EQUIPMENT

		Miles	Cost	
(1)	Catenary system:			
	(a) Single track	175	$2,013,000	
	(b) Double track	68	1,700,000	
	(c) Three-track	9	291,000	
	(d) Four-track	42	1,625,000	
	(e) Yards and sidings	221	1,658,000	
(2)	Total	.....	.....	$7,287,000
		Capacity		
(3)	Substations .....kilowatts	82,100	.....	4,926,000
(4)	Locomotives:	Number		
	(a) Freight	43	$3,440,000	
	(b) Passenger	55	4,576,000	
	(c) Switcher	41	2,657,000	
(5)	Total	139	.....	10,673,000
(6)	Sum of specified items	.....	.....	$22,886,000
(7)	Allowance for unspecified items, 10 per cent of (6)	.....	.....	2,288,600
(8)	Overhead, 20 per cent of (6)	.....	.....	4,577,200
(9)	Total gross cost	.....	.....	$29,751,800
		Total tonnage		
(10)	Credit for released steam locomotives	30,300	.....	*6,060,000
(11)	Net cost	.....	.....	$23,691,800

*Present value.

In table No. 1 are listed the costs of electric equipment necessary to make the savings possible with electric operation.

Following the procedure outlined in the preceding paragraphs, a study was made for all the Class 1 railroad systems within the superpower zone except the Ulster & Delaware, the New York, Ontario & Western, and the Western Maryland. The first two were omitted after a preliminary examination because their traffic was too light to warrant electrification. The Western Maryland was omitted because only a small part of its traffic is within the zone; the preliminary examination, however, indicates that the Western Maryland traffic would justify electrification. This left a remainder of 13 railroads in the zone that were studied. The Boston & Albany was included with the New York Central and the Long Island with the Pennsylvania. It was not possible in this study to adhere strictly to the limits of every operating division reported by the railroads, and some divisions were therefore consolidated into routes. The number of divisions or routes range from one on the Boston & Maine to nine on the Pennsylvania and aggregated 40 for the 13 roads.

The results of the study are given in Figs. 6 and 7 which show for each of the 40 divisions the annual saving, in percentage of the net cost of electrification, plotted against the energy required, in kilowatt-hours per year, together with the accumulated average percentage of saving for the divisions as grouped. Fig. 6 shows the saving exclusive of the saving in crew wages, and the divisions are arranged in the order of percentages. With these results as a criterion of economical electrification the "selected divisions" are assumed to be all that show a saving of nine per cent or more. The group of divisions thus selected shows an average saving of 11.4 per cent. It includes 30 of the 40 divisions examined, comprised in 11 of the 13 systems. The saving, including the wage saving, for the 40 divisions, is shown in Fig. 7. For the "selected divisions" these savings range from 10.6 to 19 per cent and average 14.2 per cent. The total energy required annually for these 30 divisions would be 4,400 million kilowatt-hours, and the maximum demand approximately 850,000 kilowatts.

The low percentage of saving shown by the divisions not included in the selected group, except those of the New York Central, is due to light traffic. On the New York Central the train cost of transportation, the cost of maintaining steam locomotives and the cost of coal per mile are lower than on any other system, owing in part to the fact that this is a water-level road with a large amount of through traffic; these are favorable conditions for economical steam operation and, therefore, afford less opportunity for saving by electrification.

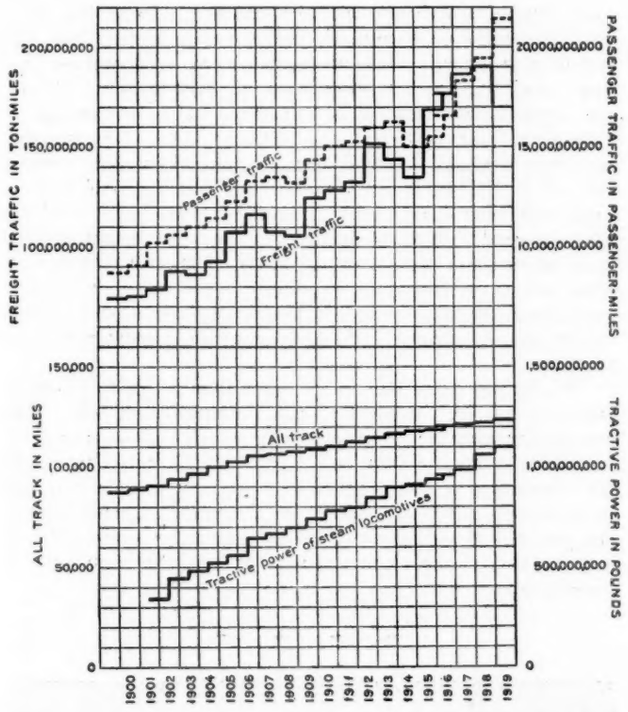


Fig. 8. Growth of Steam Railroads in the Superpower Zone, 1900 to 1919

The amount of electrification recommended includes 48 per cent of the route miles, 53 per cent of the main track miles, 64 per cent of the yard track and 58 per cent of all track owned by the 11 selected roads in the district. The net cost of electrification of all the selected divisions would be $570,000,000, and the net annual saving in operation, including the saving in wages, $81,000,000 equal to an average of 14.2 per cent of the entire group, ranging from 10.6 per cent for the New York, Susquehanna & Western division of the Erie to 19 per cent for the New Haven-Boston route of the New Haven.

Tables are included in the report which itemize values under headings as follows: Track mileage of selected divisions, data of steam operation on selected divisions, data of electric operation on selected divisions, coal saved by electric operation on selected divisions, energy required for electric operation on selected divisions, cost of electric track facilities and equipment of selected divisions and comparative cost of steam and electric operation on selected divisions. Another table is included which gives the comparative data for steam and electric operation for all the selected divisions within the zone, aggregated into one operating system. The growth of traffic, both freight and passenger, of track, and of tractive power for the Class 1 railroads in the superpower zone from 1900 to 1919 is shown in Fig. 8. The annual rate of growth has been 5.3 per cent in passenger-miles, 4.5 per cent in ton-miles, 0.75 per cent in all track, and 6.6 per cent in tractive power of locomotives.

The amount of money required for electrification is $570,000,000. This figure is based on costs prevailing in 1919, but at costs as of June, 1921, it would be reduced by 18 per cent, to approximately $467,000,000, and before this construction can be undertaken there would be further material reductions. Probably five years from now the entire work outlined could be done for not more than $400,000,000. Good railroad authorities have stated repeatedly that more that $1,000,000,000 a year is needed by the railroads of the United States for extensions and betterments. The part of this total to be allocated to the superpower zone, as determined by the number of locomotives, would be $150,000,000. The amount required for normal extensions and betterments for three years would, therefore, be sufficient to electrify the 30 selected divisions of the railroads in this territory, with an annual saving of more than 14 per cent. The most valuable feature of the change, however, is not the amount saved, but the great increase in maximum capacity of existing trackage and general advantages of electric operation.

These figures indicate that with a return of normal financial conditions all these lines should be electrified before further great expenditures have been incurred to increase in a minor degree the capacity of the existing tracks and yards. Steam operation cannot satisfactorily meet the conditions of the crowded terminals herein described as the superpower zone; electric operation can easily do it.

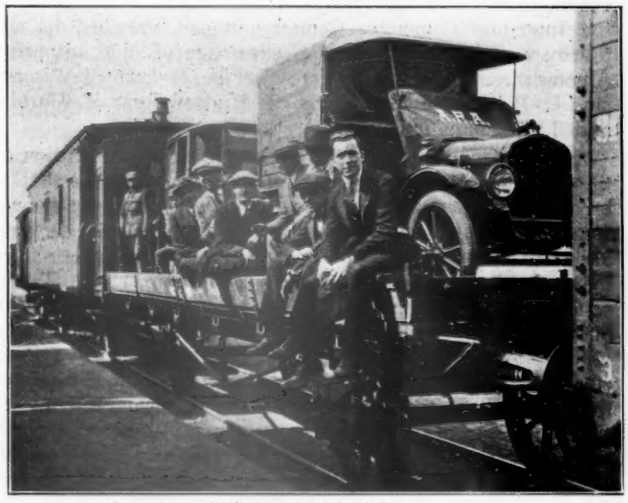


Photo from International

American Relief Train Entering Soviet Russia at the Latvian Frontier

Amendments to Transportation Act Likely to be Considered in Congress

WASHINGTON, D. C.

THE SITUATION created by the threat of a railroad strike has now been added to the demand for rate reductions, the campaign of the state railroad commissioners for a restoration of their powers to reduce rates and the railroad "funding" bill as reasons which are likely to stir up Congress to consider amendments to the Transportation Act. In fact the insistence of the agricultural bloc had already made it certain that the Senate would be called upon to vote on amendments to the rate-making sections and the opening of the subject on any point is likely to be the entering wedge for the consideration of several other points. The House, which has no element corresponding to the Senate bloc, at least as far as its power is concerned, is less likely to act, and the committee on interstate and foreign commerce had decided not to take up railroad legislation at this session, but events are shaping themselves in such a way that the House will probably be brought into the discussion by the next session.

The Senate committee on interstate commerce, or a few members of it, has been holding daily hearings on the Capper bill since October 24 and one state commissioner after another has appeared to complain that the orders of the Interstate Commerce Commission requiring advances in the state rates to correspond to the interstate advances of Ex Parte 74 have practically deprived the states of power to regulate their own local rates and have also required unreasonable advance when applied to rates which for one reason or another were already higher than the ordinary level. They have objected especially to what they termed undue centralization of authority at Washington but they have also protested a good deal against the plan of directing the commission to fix rates to produce a fixed percentage return by groups.

The various state commissioners have reviewed before the committee the history of the advanced rate case proceedings affecting their states that have arisen since Ex Parte 74, and John E. Benton, solicitor for the National Association of Railway and Utilities Commissioners, has given more general testimony, laying particular stress upon the "generosity" to the railroads displayed by many of the states. The burden of the complaint was that the railroads had ignored the state authority and had shown undue haste to get the cases before the federal commission or courts and that the Interstate Commerce Commission had stretched its au thority virtually to the point of extinction of state authority. Among those who testified were Carl D. Jackson of Wisconsin; L. P. Hale of New York; R. Hudson Burr of Florida, and J. F. Shaughnessy of Nevada.

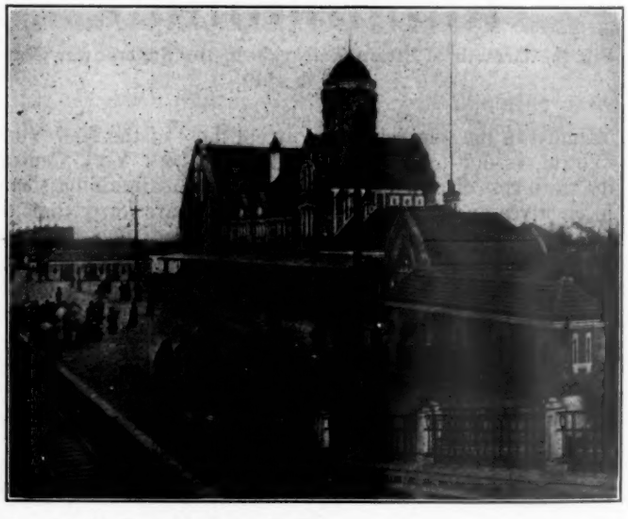
Senator Cummins agreed in general with the contention of the State representatives that Congress had not intended to broaden the Interstate Commerce Commission's authority over state rates beyond the principle of the Shreveport decision and that the railroads and the Interstate Commerce Commission had misconstrued the law in holding that the federal commission was authorized to act to correct discrimination against the entire body of interstate commerce. He took issue with several of the witnesses, however, on some of their statements regarding Section 15-A. He denied that this represented a guaranty, showed that it had never been operative, since the roads have never earned 5½ or 6 per cent under it, and also pointed out that the percentage named in the law expires on March 1. The 6 per cent rule, therefore, he said, has become "wholly immaterial" so far as its use is concerned because any further changes in rates probably will be reductions. When it was pointed out that the commission is authorized to fix the percentage of a fair return after March 1, he said the commission had always been required to allow the roads a fair return. The railroad officers had attached considerable importance to the setting up of a specific percentage standard which should represent a legal fair return. Mr. Jackson declared that the percentage rule was unworkable, whereupon Senator Cummins said that a consolidation of the roads would represent a solution for part of the difficulty.

In reply to Mr. Shaughnessy, Senator Cummins said: "I do not agree with you that Section 15-A increased rates. They would have been increased just as much without the law and in spite of it the railroads this year probably will not earn more than enough to pay their bond interest, if they earn that much."

He said that Congress had not intended to make any change except as to procedure in the Shreveport principle, but he added: "Somebody has got to see that the railroads have enough revenues to keep running." He also said it is impossible to give the states the authority to remove discriminations against interstate commerce.

Mr. Shaughnessy said that there is a feeling in his state that "things are pretty well frozen up" because the Interstate Commerce Commission order has prevented the state commission from exercising its function of regulating local rates and the federal commission is slow to act. He said the commission's order had added the usual percentage increase to rates which were already high; for example, passenger fares of 4 and 5 cents on main lines had been increased to 4.8 and 6 cents and branch line fares of 5 and 6 cents had been increased to 6 and 7.2 cents. He said that at the recent Atlanta convention of the state commissioners' association there were many in favor of memorializing Congress to go so far as to abandon the Shreveport doctrine, but it had been finally agreed to ask only for a greater limitation of the powers of the Interstate Commerce Commission.

Mr. Benton submitted to the committee a draft of amendments to the law which the state commissioners ask. This would eliminate the provision under which railroads may file complaints with the Interstate Commerce Commission asking the removal of a discrimination caused by a state rate and it would also limit the Interstate Commerce Commission to the removal of discriminations in particular rates after an investigation of the reasonableness of both the state and intrastate rates.



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German-Built Station at Tsinanfu, Shantung, China

Strike Settlement Leaves Many Issues Confused

Necessity Seen for Improving Machinery for Dealing with Recurrence of Similar Situation

By Harold F. Lane

WASHINGTON, D. C.

WHILE THE NEWS that the strike had been called off was received with universal satisfaction in Washington, there were divergent opinions as to the method by which it was averted and as to how long it would stay settled. Gratification that a disturbance of transportation had been prevented was tempered to some extent by the question as to the effect of a postponement of the wage issue upon the campaign for further rate reductions. The policy of the administration had succeeded in preventing a strike, and it had accomplished that object without having played all of its cards, although the fact that it held some high ones up its sleeve had been allowed to become apparent. However, the fact that the Labor Board had felt it necessary to speak more softly than is the ordinary habit of one who carries a big stick, was regarded as of sufficient importance to suggest the desirability of further legislation upon a subject with which Congress has been struggling without complete success for many years; and it was recognized that the settlement left many things unsettled to bob up again in the future.

While plans have not yet become crystallized and while some of the opinions expressed within the last few days may lose some of their strength now that the crisis has been postponed, it is certain that Congress will be called upon to consider some means of defining more specifically the powers which the Supreme Court has held it possesses with a view to removing for the future some of the doubts that existed as to the efficacy of the means at its command on this occasion. It is proposed to provide some penalty for violation of orders of the Labor Board; talk of anti-strike laws is being renewed; there is much discussion in vague terms of some way to co-ordinate more closely the functions of the Board that fixes wages and the Commission that determines rates, and if nothing more is done the Labor Board is likely to be removed from Chicago, its present statutory headquarters, to Washington, where it will be in closer touch with the Interstate Commerce Commission and other government agencies, including the President.

President Declines to Comment

President Harding, who was not apprised of the calling off of the strike until Friday morning, as his train neared Washington, expressed his gratification that the matter had been settled but declined to comment further. As he shook hands with the members of the train crews, he said: "I'm glad the strike is off and so are you, aren't you?" The men smilingly nodded assent. Later it was stated at the White House that the President was naturally pleased that there was to be no tie-up of transportation and that he had not yet received a report which was on its way to him from the Labor Board. The Board does not regularly report to the President but it had done so on this occasion because he had consulted with the members of the public group and had charged the Board with the responsibility for dealing with the situation. No effort has been made at the White House to attribute the credit for the settlement to the President. It was said that the responsibility was that of the Board.

The President would not indicate whether he considered that he had received an answer to the question as to whether the Labor Board was "a perfectly futile agency" and he did not express his opinion as to the lessons that have been learned as a result of the experience through which the country has passed, but it was learned that he regards the subject of a modification of the present law as "a live question" and that he expects some recommendations for the future will grow out of the situation.

Mistake to Locate Labor Board in Chicago?

It is also known that members of the Labor Board, in addition to believing the Board ought to be given some "teeth," feel that they ought to be located in Washington and that the President himself thinks it was a mistake to locate them in Chicago out of touch with the other branches of the government. The selection of Chicago as the headquarters of the Board was made by Congress at a time when its members had been besieged for weeks with a labor lobby of unusual proportions which had tried to prevent the return of the roads to private management and when there was a feeling that labor had been unduly influential in the government. In addition to the fact that Chicago is centrally located one purpose was to get them out of Washington.

Chairman Cummins of the Senate committee on interstate commerce said he was glad there was to be no strike but said he did not care to comment on the method of settlement or on the functioning of the Labor Board "as a board of mediation and conciliation."

A prominent member of the cabinet expressed the opinion that the whole question would come up again about next spring, because, he said, the situation logically calls for a reduction of railroad wages. He said the rate question had been confused and that it now probably would be necessary to await the reports of railroad earnings for a couple more months to find out more definitely their financial condition under an increased volume of business.

Labor Board Has Recovered Prestige

The Labor Board has recovered some of the prestige which it had been gradually losing (partly because it had so far been unable to assert itself effectively in the case of violations of its orders by certain railroads and partly because it had not done more to help get rates reduced) but while the Board and particularly its vice-chairman, Mr. Hooper, achieved a reputation as a mediator, more credit for the result that has been accomplished is given to the President than to the Board. The President declined to dignify the strike leaders by inviting them to the White House for a consultation over the advisability of defying the orders of a branch of the government and he let it be known that he felt confident that public opinion was back of him in making every preparation for dealing firmly with a strike if it should occur. However, while his support gave force to the insistence of the Board that there should be no strike, it is recognized that the virtual promise of the Board not to reduce wages for several months was undoubtedly more effective than any moral influence possessed by the Board. In other words its strength on this occasion was derived from its weakness.

Unfavorable Criticism for Board's Statement

The Labor Board statement which told the labor leaders that there was no occasion for a strike on account of the proposed new reduction in wages because it could not reach

a decision for some time, when coupled with the suggestion that no action could be looked for until next July, aroused a great deal of unfavorable criticism. It was compared to the surrender of President Wilson and Congress in 1916 when the Adamson law was passed "at the point of a gun" and it was regarded as particularly surprising in view of the uncompromising attitude that had been displayed and of the business-like activity of the Department of Commerce, the War Department and Attorney General Daugherty and his district attorneys. The statement of the Board came as a shock to many of those who have been active in seeking a way to reduce freight rates but have found the wage question a serious obstacle. This includes certain members of the Interstate Commerce Commission who recognize the need for rate reductions but also have some regard for the need of the carriers for revenue. More deliberate consideration softened the criticism, however, in view of the manifest fact that the Labor Board docket is still overloaded with questions pertaining to rules and working conditions, which involve almost as much money as a 10 per cent wage cut, and that the Board, even without any stipulation on its part, could hardly be expected to dispose of a new question ahead of the other cases on its docket, without dealing in a purely emergency way with a subject which has already been seriously complicated by the necessity for handling it as an emergency proposition so many times before.

Brotherhoods Win Temporarily

The fact that the Board had told the brotherhood leaders, as an inducement to call off the strike, that it would not consider a request for wage reductions in the case of any class of employees until it had first disposed of the rules and working conditions for that class appeared somewhat more reasonable than the suggestion that the railroads agree to withhold their requests for wage reductions. It sounded more like a statement of a condition than a compromise. It also made it unnecessary for the railroads to make a concession, which they undoubtedly would have been most reluctant to make in the face of the suggestion that has frequently been made, even by a former railroad president now a member of the Interstate Commerce Commission, that the railroads cannot excuse high rates by high wages unless they make every effort to get wages reduced.

No Complete Victory for Anybody

A truce has been made without a complete victory for any party to the controversy. The railroads are so far unscathed, because the grain rate decision would undoubtedly have come anyway, but they have not been given any additional assistance in their efforts to meet the public demand for lower rates. The government has won a point by the yielding of the labor organizations to its insistence that there should be no strike. The brotherhoods have lost the point on which their strike vote was technically based, the demand that the 12 per cent reduction be rescinded, but they have won for the time being the object for which it is well understood they were actually striving, that is to stave off another wage reduction and the modification of some of their rules and have declared that the plan constitutes "an acceptable basis of settlement." In view of the statement made by W. S. Carter that he doubted whether 20 per cent of the men had read the statement on the strike ballot and his further statement that the labor organizations were "playing a game of poker without cards" and always asked for more than they expected to get, it would appear that the kind of bluff represented by a strike threat is still about as potent as the influence of an order of the United States Railroad Labor Board.

Further Freight Rate Cuts

One difficulty about the situation from the viewpoint of the railroads is that the Labor Board and the Interstate Commerce Commission are not so closely co-ordinated that the promise of the former that wages will not be reduced for at least several months may be taken to mean that the Interstate Commerce Commission will postpone consideration of its docket of petitions for rate reductions for a similar period. It is believed that the Commission will undoubtedly feel it necessary to go slow in ordering further rate cuts, because it realizes that it is charged with a degree of responsibility for the adequacy of railway revenues and no one credits it with a desire to injure the roads, but it is under a tremendous pressure and it has on several occasions prior to its recent decision in the grain rate case displayed a willingness to discount an optimistic view of the future in reaching its decisions.

The earnings of the railroads have been making a comparatively good showing for August, September and October, the three best months of the year, and while they will undoubtedly begin the usual seasonal decline about the first of November, the earnings figures for the better months will be the only ones available to the public until about the first of the year, when the November reports come out. This will afford an excuse for continued agitation for rate reductions based on the kind of reasoning that was used in 1919 when some of the advocates of government control proclaimed that the Railroad Administration was earning at the annual rate of four times the earnings of the three best months of the year, although most of the months had shown deficits.

Anti-Strike Legislation Considered

Many members of Congress who are getting tired of having the country stirred up by strike threats every year or two are becoming strong for anti-strike legislation, such as has been passed by the Senate on two recent occasions, but which the House has been unwilling to accept. Others more conservative feel that no law absolutely prohibiting strikes could actually be made effective in case the employees involved really felt so dissatisfied with the wages or working conditions fixed for them that they were unwilling to work under them longer. It is argued, for example, that if the decision of an impartial board really appeared to the men so intolerable that they would be willing to risk the chances of a strike there would not be jails enough to hold them, or they could bring about the practical effect of a strike by simply quitting their jobs without a tangible conspiracy to do so.

On the other hand, it is contended that an anti-strike law might not meet such a condition but that it would eliminate the potency of the strike bluff which has usually been so effective in the past. It is recognized that men cannot be forced by law, in time of peace, to work for a given wage against their will, and that if a large majority of the railroad men of the United States are actually determined to strike rather than accept the terms of employment offered them, the shippers and passengers of the country will have to pay rates sufficient to hold them, whether the roads are run by private companies or by the government. However, a law penalizing a conspiracy to strike, would tend to reduce strike threats to the irreducible minimum. Some of the patrons of the railroads recently have displayed some signs of a willingness to strike themselves rather than be bluffed into paying wages higher than they think are necessary.

The outcome of the conferences at Chicago has also suggested the possibility of enacting something like the Canadian Lemieux law, which prohibits a strike until after a tribunal has passed on the controversy and stated its view of the merits to the public. In the present case the strike threat collapsed after a public discussion of the issues had shown that the principal grievance of the brotherhoods was in anticipation of something which had not occurred, because the railroads had not filed their requests for wage reductions, the Board could not pass upon them promptly if they were filed and no one knew what its decision would be anyway.

The discussion of the case had also shown the brotherhoods that their bluff was being called and the hearing before the Labor Board gave them an opportunity to withdraw with some appearance of honor, from a position from which stubbornness might easily have made it difficult to retreat.

Greater Co-Ordination With I. C. C.

Much is heard of the suggestion that there ought to be greater co-ordination between the Labor Board and the Interstate Commerce Commission, but there has thus far been no explanation as to how this could be accomplished except by giving the functions of the Board to the Commission and making the board itself a bureau of the Commission. It is more frequently suggested that the board be abolished and its functions conferred upon the Commission. At the time of the eight-hour basic day demand in 1916 the railroads strongly urged that the question be arbitrated by the Interstate Commerce Commission, the body that has the last word as to rates. This suggestion was inspired in part by the experience of the railroads in advancing wages or having them advanced by arbitration boards, and then finding it somewhat difficult to convince the commission without long delay that rates would have to be advanced correspondingly. In one decision written by Commissioner Prouty it was suggested that the commission would not feel called upon to recognize as reasonable rates that might be made necessary by unreasonable demands of a "labor trust" or of any "trust" that supplied materials and equipment to the roads.

I. C. C. Does Not Want Jurisdiction Over Wages

At the time the transportation act was in the process of making, it was often suggested that if wages were to be fixed by the government they ought to be fixed by the same body that fixes the rates. The commission strongly opposed this, however, on the ground that it would be difficult to determine either one unless the other were somewhat fixed. Chairman Clark, in discussing the views of the Commission before the House Committee on Interstate and Foreign Commerce, said he knew of no reason why the Commission should be considered better qualified to exercise the functions of mediation, conciliation and arbitration than other officers of the government to whom those duties might be committed.

"But above all that," he said, "we think it would be an unsound public policy to place in one body the duty of regulating activities of the carriers and their rates and charges, from which their revenues are derived, and also the fixing of the largest item in the operating expenses of the railroads, to wit, the wages of the employees."

Mr. Clark said he believed it would be developed in a few years that this would be destructive of the influence and standing and opportunity for good of the entire plan and of the body that administers it. Applicants for increased wages would say that the Commission could give the wages and increase the rates if necessary. If that were done the tribunal would be accused of playing to popularity among labor forces and disregarding the interests of the public. If it were refused, and a strike occurred they would say, on the other hand, that the Commission was so niggardly about increasing rates that it had precipitated all the trouble. He did not question the advisability or the propriety of the government doing all it possibly can to adjust disputes affecting, or even regulating, the question of the wages of the employees of the carriers, but he urged that whatever is done in that line be placed in the hands of a tribunal that has that question to deal with and, he said, "our Commission will deal with the questions committed to it in the light of what is done in a legal way by another tribunal that considers matters without having always to bear in mind that if we do this we must do that."

It has now come about, however, that the Labor Board is unable to readjust wages rapidly enough to meet the demand for lower rates and the Commission, impatient to perform its duty to give the shippers what it considers reasonable rates, is encountered by the obstacle of high wages, which it is powerless to change. The Commission has not indicated in any way what it thinks of the present wages. It generally refers to them only by including them in "operating costs" and when it ordered the grain rates reduced it did so by discounting further reductions in such costs without saying whether or not it expected further reductions in wages. Commissioner Potter was more explicit in his opinion in the grain case, when he said that if the question as to what the shippers can afford to pay is to be determined by the commission in fixing rates, the Labor Board must take its finding into consideration in fixing wages. If the Labor Board fails to do so, however, a deadlock results somewhat resembling the situation that might exist within the commission if it had both functions to perform, except that the Commission could reach a decision by a majority vote and having determined that wages should be at a certain level would naturally find it necessary to try at least to make rates that would support them, or having fixed rates would try to find what wages could be paid out of them.

Western Roads Seek Modification of Grain Rate Reduction

The announcement of the Labor Board that wage reductions cannot be considered for a long time has apparently put a crimp in the efforts of many interests to induce the railroads to make voluntary rate reductions. Traffic executives of the Western roads have been in Washington this week conferring among themselves and for the purpose of seeking a conference with the Interstate Commerce Commission with a view to asking a modification of its decision in the Western grain rate case, in which the roads were told to reduce the rates on grain, hay and grain products by November 20, but in which the commission has not yet issued a formal order. A conference with the commission was planned for Wednesday but was postponed until Friday. It is understood that one proposal which was to be made to the commission was that a general 10 per cent reduction in the rates on agricultural products be substituted for the larger reductions which the commission proposed on grain. This is on the ground that there is now no prospect for an early wage reduction, although there was one at the time the commission reached its decision, and that a reduction in the grain rates would only invite demands for similar reductions in many other rates.

An informal conference between representatives of the railroads and the shippers on the rates on fish and sea foods was held under the auspices of the commission on Tuesday and a similar conference with representatives of the iron and steel shippers was proposed for Friday or Monday.

THE RESCINDING of the strike order was an impressive exemplification of the great power of enlightened public opinion, which in this instance so unmistakably demonstrated that the majority of the people throughout the country believed the threatened strike was a grave menace to business and absolutely unjustified. —*Guaranty Survey.*

THE STATE EQUALIZATION BOARD of Tennessee has made the following reductions in tax assessments: Southern Railway, one lot in Memphis, assessed $500,000, reduced to $400,000; Nashville Union Terminals, assessed at $600,000, reduced to $500,000; Kansas City & Memphis Bridge Co., assessment fixed at $1,250,000; Harrison City and Memphis Bridge Co., assessed at $25,000, reduced to $18,000; C. N. O. & T. P. Railroad, assessment fixed at $96,000 per mile. These constituted the only changes in the assessments as sent up to the board by the public utilities commission.

The Requirements for a Modern Car Repair Shop

Type of Building, Character of Tools and General Plan for Both Steel and Wood Equipment

By H. H. Dickinson and Paul Schioler
The Arnold Company, Chicago

THE INADEQUACY of facilities for the repair and maintenance of cars creates one of the most important problems which now confronts the executives of American railways. The enormous amount of capital tied up unprofitably in bad order cars is already a serious matter in railway economics and is growing worse through the increased unit costs of rolling stock. Furthermore, during repeated periods in more recent years, every railroad has been seriously hampered in its operations because the facilities for car repairs have not kept pace with the increase in equipment.

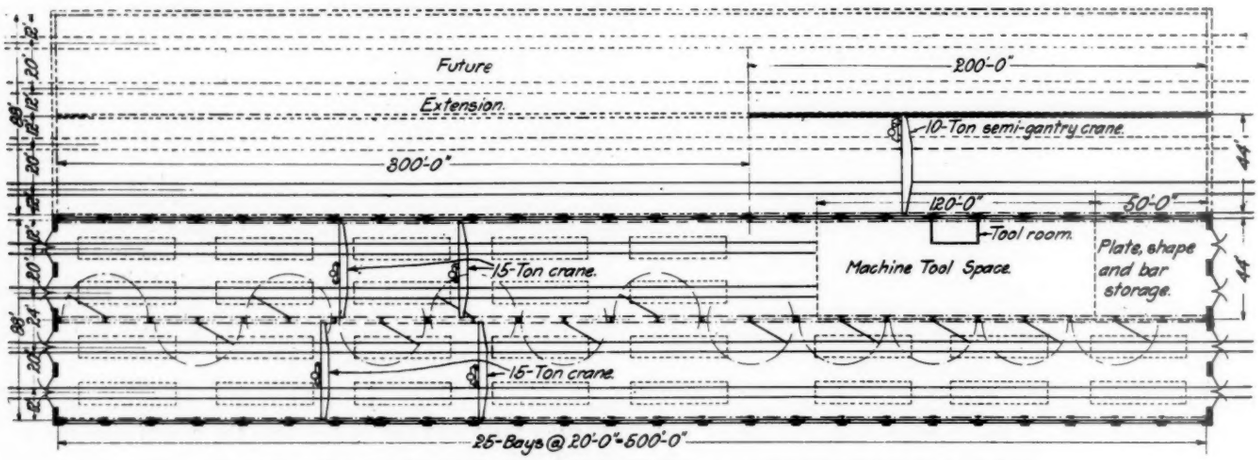
In planning a modern car repair shop the main points of consideration are the location, the site, the type, size and number of buildings, and the equipment, i. e., cranes, machinery, power, etc. Location and site are matters of local determination but in the selection and grouping of buildings and their equipment with apparatus, labor saving devices and machinery, certain specific recommendations and suggestions may be made.

The work of repairing railway cars falls naturally in two main divisions; wooden cars and steel cars, with the intermediate one of cars with steel underframes and wooden tops. For wood car repairs frame buildings will usually answer the purpose in a satisfactory manner. It is true that they are not fireproof, but this does not add to the fire hazard from within, as the contents of such a shop are inflammable anyway, and the custom of supporting the roof in mill buildings on intermediate columns will, in fact, make them more desirable in this respect than steel truss buildings, as steel trusses collapse promptly under an inside fire. If it is desired to protect against fire danger from adjacent lumber yards, storehouses, etc., a fireproof roof covering may readily be provided.

The saw and planing mill operations involved in the preparation of material for wood car repairs are in reality a separate industry from car repairing. The following list of machinery is recommended for the average requirements:

1—four-cylinder sill and timber dresser, motor driven.
1—double-cylinder surfacer, motor driven.
1—planer and matcher, motor driven.
1—24-in. rip saw table, motor driven.
1—16-in. rip saw table, motor driven.
1—36-in. swing cut-off saw, motor driven.
1—24-in. cut-off saw table, motor driven.
1—vertical boring and mortising machine, motor driven.
1—car gainer, motor driven.
1—12-in. mitre saw table, motor driven.
1—24-in. jointer, motor driven.
1—48-in. band saw table, motor driven.
1—saw gumming machine, belt driven.
1—vertical car tenoner, motor driven.
1—wood lathe, belt or motor.
1—three-spindle vertical and radial car borer, motor driven.
1—flexible single spindle post borer, belt driven.

It is recommended that this machinery be housed in a separate building, or at least segregated in a room at one end of the car repair shop. The necessary system of shafting and pulleys, individual motor installations, ducts for the removal of sawdust and chips, and the whole organization of the millwork, are best handled in this manner. The efficient transportation and handling of material from car to pile and through the mill, and thence to the cars undergoing repair, is quite as important as is material handling in any industry, and it is best accomplished by properly arranged industrial tracks and yard cranes. Overhead crane service cannot be very well arranged in a mill constructed building, but for wood work only it may be dispensed with in most cases.



A Steel Car Repair Shop with a Longitudinal Arrangement in Two 44-ft. Aisles

Work on steel cars and on cars with steel underframes as a rule compels the selection of steel frame structures, for the double reason that these are easily made fireproof throughout and they allow the proper installation of overhead crane service as well as the attachment of jib cranes in the most efficient manner. Moreover, steel trusses and steel sash, being of smaller dimensions than wood, allow a better diffusion of exterior light. Wherever climatic conditions permit, the sawtooth form of roof should be carefully considered, as it gives excellent light between cars standing on repair tracks. At any rate, the monitor sash or roof lighting should

be placed crosswise over the tracks. Monitor sash should be arranged for ventilation and the side wall sash should also be provided with ventilated sections. Factrolite glass is recommended because of its superior diffusion of light and the elimination of shadows. Artificial lighting is best obtained by using tungsten lamps with enameled steel reflectors; the distribution of lamps must provide for full illumination of the spaces between cars on tracks.

The best artificial heating system is a combination of direct radiation and indirect or fan blast heating, the direct radiation to be distributed along the building walls in proper quantity to compensate for the glass area exposure, and the fan blast outlets to provide heat for the center area of the shop and to take care of the requisite air circulation. If because of the character of the ground or for other reasons, underground ducts are undesirable, individual motor-driven fan heating units may be used to advantage.

Either Longitudinal or Transverse

No universal choice can be made between the longitudinal and the transverse type of shop. If the former is decided upon, a unit span of about 84 ft. between crane rails permits of a good crane arrangement and allows for four through tracks, 20 ft. center to center, and a 12-ft. space between each outside track and the wall. From 60 to 65 ft. of track should be allotted to each car spot and the length and number of building units determined accordingly. Machine tools should be installed on one side of the shop, leaving out a portion of the through track at this point. In a transverse type of shop the cranes will have a span of about 65 ft. and the machine tools will be placed at one end of a shop unit. The height of the crane runways should be 25 ft. and the clear height under trusses 32 or 33 ft. The building should be piped for air and acetylene, a double air outlet to be provided for every car spot and an acetylene outlet for every two car spots. The building should also be wired and have a contact at each car spot for the attachment of modern electrical tools.

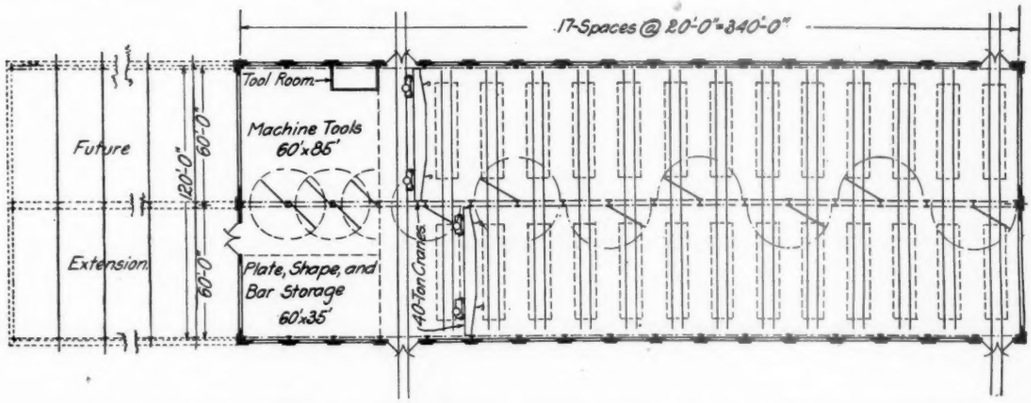
The best flooring for car repair shops is creosoted wooden blocks on a concrete base. This is usually preferred by mechanics where nothing in the industry militates against its adoption, and in work of this nature there are no objections to this floor. It is durable, sanitary, non-conducting as to heat and cold and affords a satisfactory foothold.

Adjoining the machine tool area racks for the storage of a reasonable quantity of large sheets and plates should be provided as well as storage facilities for bars and shapes. Storing this material inside the building not only permits unloading and storage by crane and provides crane conveyance to machines without extra handling, but it also eliminates deterioration from rust and other defects occasioned by continued exposure. An important factor in the efficiency of the shop is the relative adequacy of the general stores, and it will be well to make ample provision for all materials and supplies required in overhauling all the types of cars for which the shop is intended.

To permit full use of tracks for the spotting of cars under repairs and to have the receiving and unloading of material interfere as little as possible with the car repair work in the shop proper, it is recommended that, where possible, material be received on a track outside of the walls. In such a layout a six or eight-ton crane, supported partly by yard columns and partly by the building columns and spanning the material track, is a profitable investment and should be installed.

Repairs and overhauling of cars result in the accumulation of a large amount of sheets, plates, bars, rods, etc., all partly damaged but having considerable reclamation value. It is good economy to provide, in the machinery equipment, suitable tools, such as straighteners (plate and bar), furnaces, bulldozers, bolt threading machines and nut tapping machines, in order that salvaged material may be reclaimed on the spot and either used immediately in the shop or turned over to the stores department.

The widest possible application of crane service is advocated as the most fruitful way of securing an intensive utilization of the plant as a whole. The maximum load to be handled by cranes is usually between 25 and 35 tons, but the average load is much lighter. Two cranes of 15-ton capacity each may readily be operated together to handle a maximum load when occasion demands, and for general purposes they serve the shop better than it is possible to do when the crane capacity is concentrated in one machine of, say, 30 tons size.



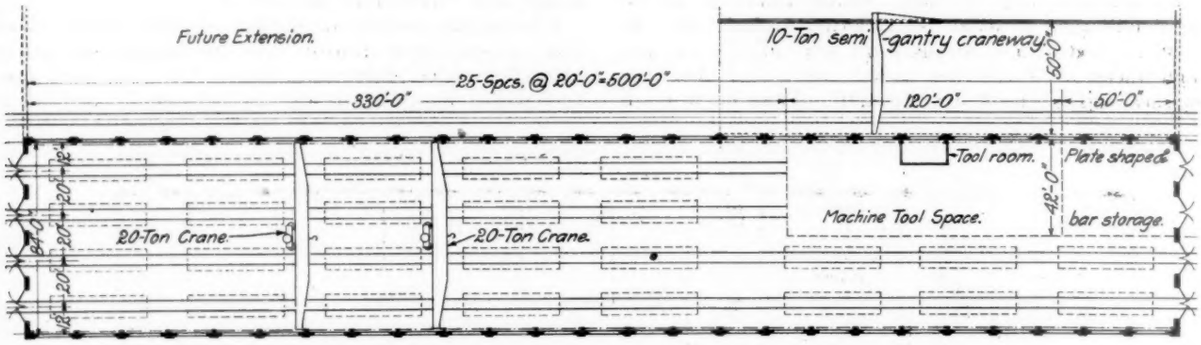
Plan for a Steel Freight Car Repair Shop with a Transverse Layout, Two 60-ft. Aisles

It has already been stated that truss spans giving approximately 84 ft. between crane rails are desirable in longitudinal shops. For flexibility of crane service it is best to substitute for this two bays of 44 ft. each. The use of center columns should enable the designer to lighten the steel work in the roof trusses and provide good support for jib cranes. It will be less expensive to install two 42-ft. cranes and equip each one with a 15-ton hoist and an auxiliary rapid hoist of smaller capacity, than it would be to put in one crane of 84 ft. span, and they will serve the shop more efficiently. It is recommended that the lengthwise travel of cranes be limited to 300 ft., preferably about 250 ft., so that a shop unit from 500 to 600 ft. long should have at least two cranes, or sets of cranes. Jib cranes of the portable type, or attached to steel columns are an excellent means of handling work at car spots and at certain of the machine tools. They release the overhead cranes for general transportation and material handling through the whole shop. The jibs should have about a 20-ft. swinging arm and should be of at least one ton capacity.

The painting in a modern car repair shop should be done

by pneumatic sprays. This applies to wood and steel work alike. It may be desirable to have the plant equipped with a sand blast outfit, so that when steel cars or underframes require thorough cleaning the work may be disposed of in the most efficient manner. However, only a fraction of the cars passing through the plant will need this treatment, and unless the capacity of the plant calls for at least 20 cars per day, a sand blast equipment can hardly be installed advantageously.

The wheel and axle work must be handled by a wheel lathe, an axle lathe, a wheel press and a wheel boring machine, and if the shop is about 84 ft. by 600 ft., or its equivalent, these tools are best placed among the other machine tools and the work organized to co-ordinate with the other shop operations. If, however, the layout provides for two or more shop units, then the work on wheels and axles is best done in a separate department located adjacent to the shops and operated in conjunction with them, leaving the shops proper to handle repairs to car bodies and underframes exclusively. One wheel and axle department will, of course, serve a steel car and a wood car shop.



A Steel Freight Car Repair Shop with a Longitudinal Arrangement in an 84-ft. Aisle

Tools for Steel Car Work

The following machine tool equipment is recommended for a car repair shop which is to handle the variety of types of steel cars used on the majority of railways:

One single end punch (24 in. throat), motor driven.
One double punch and shear (30 in. throat), motor driven.
One double horizontal punch and bending machine, motor driven.
One 8-ft. gate shear (cap. ¾ in. plate), motor driven.
One 6-in. by 6-in. by 1-in. angle shears, motor driven.
One alligator bar shear, motor driven.
One plate straightening press, pneumatic.
One 9-ft. by 14-ft. plate heating furnace, oil and gas burning.
One 12-ft. flanging clamp, pneumatic.
One 7-ft. by 10-ft. plate heating furnace, oil or gas.
One heavy duty bulldozer, motor driven.
One 5-ft. by 8-ft. furnace, oil or gas.
One 2-in. bolt heading, upsetting and forging machine, motor driven.
One forging furnace, oil or gas.
One 2½-in. double head bolt cutter, motor driven.
One 300-lb. power hammer, motor driven.
One 30-in. by 3-ft. furnace, oil or gas.
One 1,000-lb. steam hammer, steam.
One 3-ft. by 4½-ft. furnace, oil or gas.
One 6-ft. radial drill, motor driven.
One 4-spindle drill press, belt driven.
One 4-ft. drill press, belt driven.
One 26-in. drill press, belt driven.
Two heavy emery wheel stands, motor driven.

This list is in addition to any tools for reclaiming materials and does not contain the wheel and axle tools referred to in a preceding paragraph. The list is necessarily empirical and must be reviewed and compared with the individual requirements of any one shop under consideration. It is manifest that when, for instance, a shop is being laid out to handle principally the repairs of one type of steel cars, some of the tools mentioned may well be omitted and several others added; indeed these notes do not represent an attempt to design in detail any one particular car repair shop.

A number of railroads have experienced considerable annoyance and suffered a large aggregate loss as a result of too frequent loss of identity of freight cars undergoing repairs. A timely reform in the operation of car repair shops would be the adoption of uniform methods of checking the number on a car brought into the shops, preserving it upon the car while it is under repairs and checking it out again, but such a reform, to have the desired effect, would have to be universal in the shops of all railroads.

When a modern car repair plant is contemplated it is almost invariably the intention to provide steady employment for a number of workmen. Therefore it is advisable to provide a service building, located as conveniently as possible to the plant entrance. This building need not be elaborate, but it should contain a requisite number of steel lockers, lavatories and toilets and also some shower baths of approved sanitary design. There should also be a room where the men can eat their lunch during cold weather.

These suggestions and recommendations, although specific and based on examination of actual conditions on the roads and in existing shops, will only be found of value when carefully considered with all the local conditions and circumstances bearing upon the individual project of any railroad.

Thus, the question of location and site, as regards labor conditions, topography of the prospective site, climatic conditions, fire protection facilities and proximity to railway terminals from which empty cars would be received must be gone into and decided upon in every instance, and the foregoing notes must be considered with the questions of the volume and class of work, frequency and season of maximum demand, average daily requirements and desirability of provisions for future extensions.

The three typical layouts shown embody some of the general desirable features mentioned. They are, of course, not intended to serve even as finished sketches of any one specific project, but they may form a basis for study and discussion and a nucleus around which layouts may be developed for particular conditions affecting car repair shops with the contiguous building for mill, wheel shop, store house and other accessory departments.

State laws already passed which deal with car repair shops and sheds give ample proof that the development of such buildings is anticipated by interests outside the railway executive offices. Such legislation is largely fostered by labor organizations and the efforts have been to provide the best working conditions and physical protection for the men employed. However, to obtain the best results the planning

should be on a broader basis than this and the matter of proper protection for workmen should be viewed simultaneously with consideration of efficiency and economy in the operation of railroads.

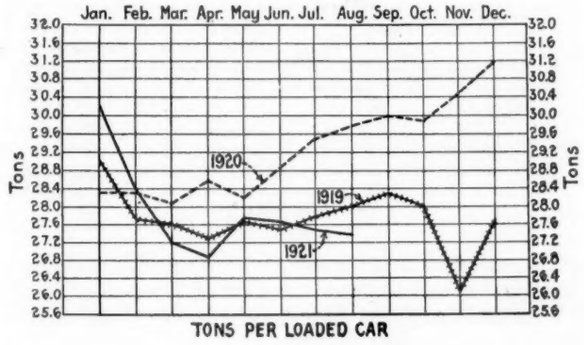
In conclusion, attention is drawn to the fact that in comparison with the investment in modern power repair facilities the sums expended to date in car repair shops are but small—probably less than 20 per cent of the former—and yet the annual expenditures for maintenance of rolling stock usually greatly exceed the cost of maintaining locomotives. It has been demonstrated that it has not been possible to realize the ultimate efficiency of the modern locomotive equipped with superheater and mechanical stokers, because repair shops have not kept pace with improvements in the locomotives. It is logical to conclude that the enormous investment in cars may be made more profitable by providing the means for keeping them in shape. By planning car repair shops with some consideration for the observations made above, the results will certainly make for increased efficiency of the mechanics, whose work will, in fact, be changed from an open air occupation, with all the elements of uncertainty peculiar to such work, to modern shop employment of the highest and most satisfactory type. The roads will profit through better workmanship, less frequent delays; improved scheduling of car repairs and lower costs of maintenance.

Freight Car Loading Continues to Increase

Strike Talk Partly Responsible for Increase—Principal Increases in Coal and Merchandise

WASHINGTON, D. C.

THE loading of revenue freight during the week ended on October 22 totaled 962,292 cars, or 56,258 cars more than during the previous week, according to reports received by the Car Service Division of the American Railway Association. This was within 46,526 cars or 96 per cent of the number loaded during the corresponding week in 1920 and only 14,759 cars less than were loaded during the corresponding week in 1919. The loading for the week was the largest since October 30, 1920, and presumably includes some increased shipments made in anticipation of a strike.



The gain over the week before was due principally to the increased movement of coal and also merchandise and miscellaneous freight, which includes manufactured products, although increases were reported in the loading of all commodities.

Loading of merchandise and miscellaneous freight amounted to 575,625 cars or 24,817 cars more than during the previous week and 15,787 cars more than were loaded during the corresponding week in 1920. Coal loading totaled 212,219 cars or 20,713 cars more than were loaded during the preceding week. It was, however, 13,731 cars under the total for the corresponding week last year.

There was an increase, compared with the week before, of 3,978 cars in the loading of live stock, the total being 40,188 cars, which was 5,000 more than the total for the corresponding week in 1920 but 1,388 below that for the corresponding week in 1919. Loading of grain and grain products was 51,001 cars, an increase of 2,629 over the week before and 11,521 cars greater than the total for the same week last year. It also was 6,980 cars in excess of the total for the same week in 1919. Ore loadings also increased

REVENUE FREIGHT LOADED AND RECEIVED FROM CONNECTIONS

FOR WEEK ENDED SATURDAY, OCTOBER 22, 1921

Districts:	Year	Grain and grain products	Live stock	Coal	Coke	Forest products	Ore	Merchandise L.C.L.	Miscellaneous	Total revenue freight loaded: This year 1921	Corresponding year 1920	Corresponding year 1919	Received from connections: This year 1921	Corresponding year 1920	Corresponding year 1919
Eastern	1921	11,212	3,826	54,207	2,194	4,560	2,768	64,632	95,411	238,810	.....	.....	246,652	.....	.....
	1920	5,951	2,998	62,342	3,644	7,150	10,503	50,090	111,560	.....	254,238	240,685	.....	267,234	258,002
Allegheny	1921	3,269	3,734	59,330	2,537	3,334	5,775	47,569	63,946	189,494	.....	.....	132,390	.....	.....
	1920	2,638	3,706	67,208	7,022	3,399	14,216	40,679	71,080	.....	209,948	206,751	.....	155,647	144,506
Pocahontas	1921	233	457	25,696	202	1,248	.....	5,698	4,202	37,736	.....	.....	16,329	.....	.....
	1920	82	356	23,517	1,034	1,710	209	5,456	4,927	.....	37,291	37,807	.....	19,370	20,269
Southern	1921	3,584	2,339	29,289	601	17,250	451	40,574	41,139	135,227	.....	.....	74,697	.....	.....
	1920	2,690	2,010	28,490	1,361	18,851	2,884	35,792	39,655	.....	131,733	133,297	.....	73,981	73,556
Northwestern	1921	15,069	10,370	12,575	717	11,860	12,509	29,034	41,737	133,871	.....	.....	57,224	.....	.....
	1920	13,357	10,144	12,096	1,862	14,204	41,507	28,906	42,025	.....	164,101	151,136	.....	64,184	65,167
Central Western	1921	13,095	15,895	25,209	216	7,516	738	32,552	59,122	154,343	.....	.....	65,088	.....	.....
	1920	10,668	13,324	25,043	493	6,852	3,071	31,767	49,839	.....	141,057	144,019	.....	67,210	80,005
Southwestern	1921	4,539	3,567	5,913	180	7,658	945	16,581	33,428	72,811	.....	.....	53,142	.....	.....
	1920	4,094	2,649	7,254	171	7,588	632	17,664	30,398	.....	70,450	63,356	.....	53,686	53,010
Total all roads	1921	51,001	40,188	212,219	6,647	53,426	23,186	236,640	338,985	962,292	.....	.....	645,522	.....	.....
	1920	39,480	35,187	225,950	15,587	59,754	73,022	210,354	349,484	.....	1,008,818	.....	.....	701,312	.....
	1919	44,021	41,576	231,972	11,344	57,007	45,580	150,487	395,064	.....	.....	977,051	.....	.....	694,515
Increase compared	1920	11,521	5,001	.....	.....	.....	.....	26,286	.....	.....	.....	.....	.....	.....	.....
Decrease compared	1920	.....	.....	13,731	8,940	6,328	49,836	.....	10,499	46,526	.....	.....	55,790	.....	.....
Increase compared	1919	6,980	.....	.....	.....	.....	.....	86,153	.....	.....	.....	.....	.....	.....	.....
Decrease compared	1919	.....	1,388	19,753	4,697	3,581	22,394	.....	56,079	14,759	.....	.....	48,993	.....	.....
October 15	1921	48,372	36,210	191,506	6,332	53,017	19,789	232,541	318,267	906,034	1,018,539	972,078	609,378	687,694	694,945
October 8	1921	53,964	34,073	180,339	6,054	49,459	25,702	233,465	312,684	895,740	1,011,666	982,171	597,524	701,083	700,513
October 1	1921	*57,890	32,868	178,005	5,615	49,466	26,393	234,227	317,429	*901,893	992,283	957,596	581,252	687,398	711,193
September 24	1921	*53,046	32,933	171,474	4,946	48,702	30,333	232,312	300,757	*874,503	1,008,109	995,901	569,626	693,881	684,366

*Grain and total figures revised due to correction on D. L. & W. report.

3,397 cars over the previous week, the total being 23,186, while loading of forest products amounted to 53,426 cars or an increase within a week of 409 cars. A total of 6,647 cars were loaded with coke, an increase, compared with the week before, of 315 cars.

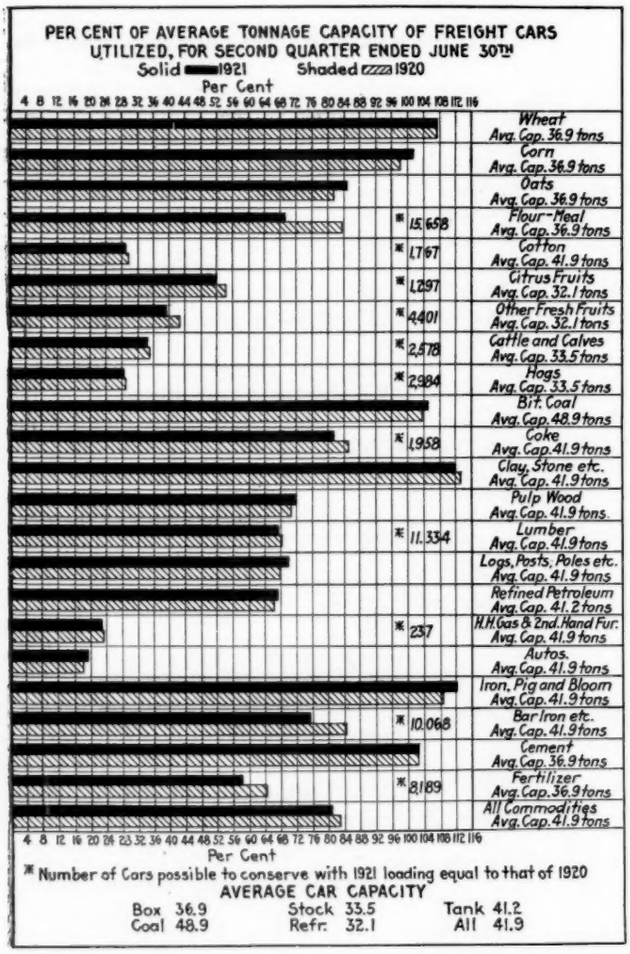
Compared by districts, increases were reported in the loading of all commodities in all except the Northwestern district while the Pocahontas, Southern, Central Western and Southwestern districts reported increases compared with the corresponding week last year.

The summary is given in the preceding table.

The weekly information bulletin published by the Car Service Division includes the following information:

Bituminous coal moving beyond the lakes via Lake Erie docks aggregated for the season to and including October 15 the total of 20,282,948 tons. This is substantially the same as the record of 1919, a season of similar conditions, and about 1,800,000 tons in excess of the same period in 1920. The indications are that the total for the season will run about up to the record of the past two years.

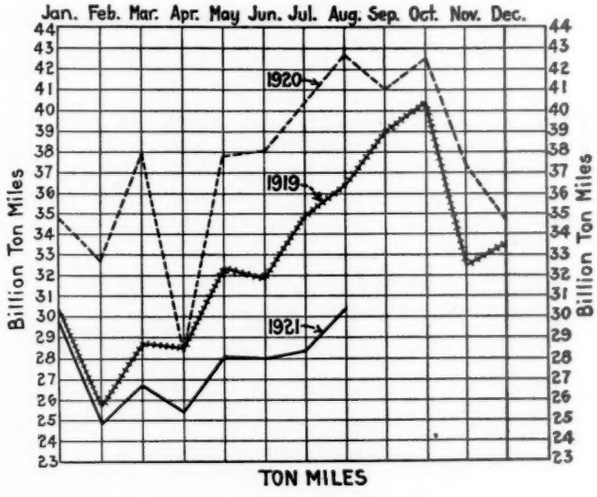
The bituminous movement via ocean to New England—a real problem if the bulk of the movement is deferred to the winter months—was 5,461,163 tons for the nine months ending September 30, 1921, as against 7,124,314 tons in the same period last year. The rail movement to October 15, 1921, was 122,517 cars as against 172,432 in the same period in 1920. It seems reasonable to assume that the much heavier movement a year ago contributed to excessive stocks on hand at the first of the year and this, with the industrial depression which has existed for much of the time since would seem to indicate that the 1921 movement is probably ample. The anthracite movement to New England is substantially normal on the basis of past years' records.


PER CENT OF AVERAGE TONNAGE CAPACITY OF FREIGHT CARS UTILIZED, FOR SECOND QUARTER ENDED JUNE 30TH
Solid 1921 Shaded 1920
Per Cent
Wheat Avg. Cap. 36.9 tons
Corn Avg. Cap. 36.9 tons
Oats Avg. Cap. 36.9 tons
* 15,658 Flour-Meal Avg. Cap. 36.9 tons
* 1,767 Cotton Avg. Cap. 41.9 tons
* 1,297 Citrus Fruits Avg. Cap. 32.1 tons
* 4,401 Other Fresh Fruits Avg. Cap. 32.1 tons
* 2,578 Cattle and Calves Avg. Cap. 33.5 tons
* 2,984 Hogs Avg. Cap. 33.5 tons
Bit. Coal Avg. Cap. 48.9 tons
* 1,958 Coke Avg. Cap. 41.9 tons
Clay, Stone etc. Avg. Cap. 41.9 tons
Pulp Wood Avg. Cap. 41.9 tons
* 11,334 Lumber Avg. Cap. 41.9 tons
Logs, Posts, Poles etc. Avg. Cap. 41.9 tons
Refined Petroleum Avg. Cap. 41.2 tons
* 237 H.H. Gas & 2nd. Hand Fur. Avg. Cap. 41.9 tons
Autos. Avg. Cap. 41.9 tons
Iron, Pig and Bloom Avg. Cap. 41.9 tons
* 10,068 Bar Iron etc. Avg. Cap. 41.9 tons
Cement Avg. Cap. 36.9 tons
* 2,189 Fertilizer Avg. Cap. 36.9 tons
All Commodities Avg. Cap. 41.9 tons
Per Cent
* Number of Cars possible to conserve with 1921 loading equal to that of 1920
AVERAGE CAR CAPACITY
Box 36.9 Stock 33.5 Tank 41.2
Coal 48.9 Refr. 32.1 All 41.9

There is continued heavy demand for refrigerator cars in the West and Northwest where new records in quantity loading and movement are being made. The following comparisons of loading of perishable commodities by districts for the first nine months this year, compared with the same period last year and with the total for 1920, will be of much interest:

District	Jan. 1, 1921, to Oct. 1, 1921	Jan. 1, 1920 to Oct. 1, 1920	Year 1920
California	136,083	104,638	138,477
Washington & Oregon	32,987	19,946	43,666
Colorado, Utah and Idaho	20,916	13,306	19,679
Total	189,986	137,890	201,822

Box car supply is equal to current demands in all sections, although in the last two weeks there has been a further marked reduction in the number of serviceable cars reported as surplus. Local shortages that have occurred in sections of the West and Southwest have been reduced by the distribution of cars from other sections.



There have been some shortages of equipment for coal loading caused by the increasing demands of the past few weeks and cars recently loaded not having had sufficient time as yet to be returned to the mines for further loading. Special attention is being directed to the loading, unloading and movement of open top cars, in view of the demand for coal which is in part seasonal and possibly affected to some extent by the threatened interruption of transportation.

The number of bad order freight cars on October 15 was 354,996 or 15.5 per cent, as compared with 15.8 per cent on October 1. The percentage of gondola cars in bad order was 15.6, the same as it was two weeks before. Of all freight cars 284,149, or 12.4 per cent, required heavy repairs and 70,847, or 3.1 per cent, light repairs.

The freight car surplus for the week ending October 23 was 99,971, of which 49,908 were coal cars and 26,624 were box cars.

FOUR MEN WERE KILLED and two were injured when a Canadian-Pacific freight train was caught by falling rock in a tunnel a mile east of Palliser, B. C., on the night of October 20. Heavy rains had caused a movement on the mountain above the tunnel, resulting in extreme pressure on the roof and sides of the tunnel and this is said to have caused the cave-in. The escape of oil from the tender of one of the damaged engines was followed by a fire which destroyed four freight cars. The accident made necessary the construction of a temporary line to detour trains around the tunnel.

Oldham Sponsor for New Rail Consolidation Plan

Boston Banker Presents Details to Investment Bankers' Meeting at New Orleans

JOHN E. OLDHAM, of the Boston banking firm of Merrill, Oldham & Co., is sponsor for a new plan of railroad consolidation. Mr. Oldham's plan was presented at the convention of the Investment Bankers' Association of America at New Orleans, La., on November 1. It has also been published by that organization in a booklet of 64 pages illustrated with 13 insert maps in colors.

The plan differs greatly from that presented in Professor W. Z. Ripley's report on consolidations to the Interstate Commerce Commission which report was abstracted in the *Railway Age* of October 1, page 609. It likewise differs to a considerable extent from the original plan presented by Mr. Oldham which was published in the Nation's Business of February, 1920 and later reproduced in pamphlet form by the Chamber of Commerce of the United States.

Mr. Oldham suggests, in his new plan, the formation of 13 systems. A distinguishing feature of his proposals is the formation of a New England system owned by the four trunk line systems which it is purposed to establish.

"Consolidations," Mr. Oldham says, "are necessary in order to establish the finances of the railroads as a whole upon a sound basis. The primary purpose of making the railroads financially sound is to enable them to obtain capital readily and economically. To accomplish this fully other requirements must be met."

"It will be of no avail," Mr. Oldham continues, "to consolidate the railroads in such a way that each road hereafter existing will be enabled to receive, under a uniform rate, its fair return in a competitive field, unless each road is assured of a credit position clearly recognized by the investing public."

Mr. Oldham further says:

Regulation Necessary to Credit

The requisites of credit are not only financial soundness but a reputation based upon conservative financial policies and management. This reputation at present is possessed only by the strong roads. It will not be secured readily by the weak roads merely by their financial reorganization, although, logically, this is all that is needed to insure the investment integrity of their securities.

Furthermore, if capital is to be obtained upon the most advantageous terms by these roads, their securities must be made available for investment on the part of savings banks, insurance companies, and other semi-public institutions. Their securities, accordingly, must conform to the requirements governing the eligibility of such investments, and these requirements quite universally include, as an essential factor, dividend payments at given rates extending over a considerable period of time. The institutional markets will not be available for the securities of roads which have found it necessary to readjust their capitalization in order to meet sound standards of credit until these roads have established for themselves the necessary record for dividend payments; nor will they be available at any time for the securities of the smaller systems, for these institutions, either because of legislative restrictions or of investment policies, for the most part confine their investments to securities of the larger systems.

To establish the necessary credit position and to give access to the most favorable security markets the strong roads must be used as the backbones of the new systems.

Consolidation Would Not Destroy Credit of Strong Roads

Much of the opposition to consolidations has been and will continue to be based on the theory that their purpose is to strengthen the weak by weakening the strong roads, and that the credit of the strong roads will thereby be impaired. If this result is to follow, it goes without saying that voluntary consolidation in a large way will never take place.

This conception of the problem, however, proceeds largely on the assumption that the weak roads generally are less favorably situated. It does not take into account the fact that approximately 25 per cent of the country's traffic is handled by systems which are weak only in their capitalization, but are similar to the strong roads both in operating conditions and in favorableness of location, and, if similarly capitalized, would have similar financial strength.

Sound Financial Structure a Prerequisite

The contention that the credit of the so-called strong roads will be impaired by merging with the weak roads, insofar as it applies to such systems as are here referred to, can be upheld only on the theory that the amount of existing capitalization rather than property value, is to be the controlling factor in determining the basis of consolidations, and that adjustment of capitalization to conform to property value is not to be made at the time or before consolidations take place. Such readjustments, however are required by the provision of the Transportation Act which stipulates that "the bonds at par of a corporation which is to become the owner of the consolidated properties, together with the outstanding capital stock at par of such corporation, shall not exceed the value of the consolidated properties as determined by the Commission." Thus in the process of consolidation over-capitalization will be eliminated wherever it is found.

The problem of consolidations, therefore, has to do largely with the merging of roads whose main difference is a matter of capitalization, inasmuch as the remaining roads—the less favorably situated—handle not over 15 per cent of the country's traffic.

Even the absorption of these roads need not prove a burden, provided proper recognition is given to the property values and relative earning capacity of the several companies involved.

Difficulties Overestimated

While the complexity of the problem of harmonizing the many interests concerned is fully appreciated, it is sufficient here to say that, if the public interest requires that such consolidations be made, the difficulties of making them on a basis which will fully recognize the rights of all parties appear to be no greater than those which have been met successfully many times heretofore in railroad and industrial consolidations.

The Thirteen Systems Proposed

Mr. Oldham proposes the formation of 13 systems as follows:

1—NEW YORK CENTRAL SYSTEM

Name	Mileage	Gross Earnings	Gross Per Mile
New York Central	6,075	$203,060,842	$33,423
Cleve. Cin. Chi. & St. Louis	2,382	42,904,858	18,009
Michigan Central	1,855	41,756,671	22,512
Pittsburgh & Lake Erie	224	20,559,224	91,545
Toledo & Ohio Central	439	5,736,686	13,078
Cincinnati Northern	246	1,830,991	7,452
Kanawha & Michigan	177	3,297,455	18,672
Lake Erie & Western	900	6,859,306	7,622
Central of New Jersey	683	32,490,917	47,586
New York, Ontario & Western	568	8,874,397	15,611
Ulster & Delaware	127	1,023,519	7,942
	13,678	$368,394,866	$26,932
LINES AT PRESENT CONTROLLED BY TWO OR MORE SYSTEMS			
*Lehigh & Hudson	97	$2,053,781	$21,261
**Monongahela	92	1,690,183	18,290
NEW ENGLAND SYSTEM to be jointly controlled by four of the trunk line systems			
Rutland	463	$3,831,743	$8,264
Boston & Maine	2,286	51,913,506	22,706
Maine Central	1,220	12,328,910	10,108
Bangor & Aroostook	632	3,955,357	6,261
New York, New Haven & Hartford	1,999	74,927,908	37,485
Central New England	303	4,819,190	15,912
	6,903	$151,776,614	$21,988

*Also in Systems 2, 3, 4.
**Also in System 3.

2—BUFFALO SYSTEM

Name	Mileage	Gross Earnings	Gross Per Mile
Erie	1,988	$62,401,580	$31,392
Chicago & Erie	269	7,455,155	27,657
New York, Susque. & Western	139	3,340,399	24,075
Wabash**	2,519	34,270,522	13,606
Wheeling & Lake Erie	512	8,179,049	15,971
Pere Marquette	2,272	20,843,657	9,176
New York, Chicago & St. Louis	570	13,947,626	24,479
Delaware & Hudson	883	25,411,263	28,764
Delaware, Lackawanna & Western	956	48,923,528	51,161
Buffalo, Rochester & Pittsburgh	586	11,667,747	19,894
Bessemer & Lake Erie	205	10,362,886	50,642
Pittsburgh & West Virginia	63	1,080,449	17,066
Elgin, Joliet & Eastern	789	12,192,426	15,457
Buffalo & Susquehanna	253	1,604,078	6,351
	12,004	$261,680,365	$20,966
LINES AT PRESENT CONTROLLED BY TWO OR MORE SYSTEMS			
*Lehigh & Hudson	97	$2,053,781	$21,261

NEW ENGLAND SYSTEM AS ABOVE

to be jointly controlled by four of the trunk line systems

*Also in Systems 1, 3, 4.
**Lines west of St. Louis in Gr. Northern-St. Paul System.

3—PENNSYLVANIA SYSTEM

Name	Mileage	Gross Earnings	Gross Per Mile
Pennsylvania Railroad	4,559	$215,428,766	$47,249
Pennsylvania Co.	1,757	67,119,283	38,206
Pittsburgh, Cin. Chi. & St. Louis	2,398	59,450,509	24,792
Phila., Balt. & Washington	717	24,001,572	33,460
Grand Rapids & Indiana	573	5,716,575	9,971
Long Island	397	14,284,869	35,962
New York, Phila. & Norfolk	124	4,626,775	37,246
West Jersey & Seashore	359	7,355,513	20,485
Cumberland Valley	164	3,528,025	21,555
Balt. Chesapeake & Atlantic	88	1,200,911	13,707
Toledo, Peoria & Western	248	1,220,565	4,927
	11,384	$403,933,363	$35,481
LINES AT PRESENT CONTROLLED BY TWO OR MORE SYSTEMS			
*Lehigh & Hudson	97	$2,053,781	$21,261
**Monongahela	92	1,690,183	18,290
†Richmond, Fred. & Potomac	88	3,475,207	39,635
††Washington Southern	36	1,647,852	46,327

NEW ENGLAND SYSTEM AS ABOVE

to be jointly controlled by four of the trunk line systems

*Also in Systems 1, 2, 4.
**Also in System 1.
†Also in Systems 4, 5, 6, 7.
††Also in Systems 4, 5, 6, 7.

4—BALTIMORE—READING SYSTEM

Name	Mileage	Gross Earnings	Gross Per Mile
Baltimore & Ohio	4,540	$108,665,110	$23,935
Staten Island Rapid Transit	24	1,551,246	65,898
Philadelphia & Reading	1,105	55,803,929	49,614
Port Reading	21	1,818,575	85,944
Atlantic City	170	2,566,796	15,083
Coal & Coke	197	1,100,109	5,576
Ann Arbor	296	2,661,519	9,001
Cincin. Indianapolis & Western	322	2,477,850	7,703
Western Maryland	694	10,791,912	15,539
Toledo, St. Louis & Western	454	5,560,324	12,260
Lehigh Valley	1,443	47,023,053	32,576
	9,266	$240,020,423	$25,904
LINES AT PRESENT CONTROLLED BY TWO OR MORE SYSTEMS			
*Lehigh & Hudson	97	$2,053,781	$21,261
**Washington Southern	36	1,647,852	46,327
†Richmond, Fred. & Potomac	88	3,475,207	39,635

NEW ENGLAND SYSTEM AS ABOVE

to be jointly controlled by four of the trunk line systems

*Also in Systems 1, 2, 3.
**Also in Systems 3, 5, 6, 7.
†Also in Systems 3, 5, 6, 7.

5—NORFOLK & WESTERN—CHESAPEAKE & OHIO

Name	Mileage	Gross Earnings	Gross Per Mile
Chesapeake & Ohio	2,375	$46,322,284	$19,504
Hocking Valley	351	7,632,572	21,763
Norfolk & Western	2,062	53,800,498	26,090
Virginian	507	7,576,315	14,945
Carolina, Clinchfield & Ohio	271	2,854,624	10,517
	5,566	$118,180,293	$21,233
LINES AT PRESENT CONTROLLED BY TWO OR MORE SYSTEMS			
*Washington Southern	36	$1,647,852	$46,327
†Richmond, Fred. & Potomac	88	3,475,207	39,635

*Also in Systems 3, 4, 6, 7.
†Also in Systems 3, 4, 6, 7.

6—ATLANTIC COAST LINE—LOUISVILLE & NASHVILLE SYSTEM

Name	Mileage	Gross Earnings	Gross Per Mile
Atlantic Coast Line	4,718	$35,464,175	$7,517
Louisville & Nashville	5,052	60,597,491	11,994
Nashville, Chattanooga & St. Louis	1,233	12,613,336	10,232
Charleston & West Carolina	342	1,925,040	5,631
Louisville, Henderson & St. Louis	200	1,655,678	8,287
Georgia	330	3,251,141	7,853
Atlanta & West Point	93	1,373,126	14,746
*Chicago, Indianapolis & Louisville	327	3,836,962	11,734
	12,295	$120,716,949	$9,819
LINES AT PRESENT CONTROLLED BY TWO OR MORE SYSTEMS			
**Washington Southern	36	$1,647,852	$46,327
†Richmond, Fred. & Potomac	88	3,475,207	39,635
††Western Railway of Alabama	133	1,341,130	10,061

**Also in Systems 3, 4, 5, 7.
†Also in Systems 3, 4, 5, 7.
††Also in System 13.
*This road will be jointly controlled by the Atlantic Coast Line-Louisville & Nashville System and the Southern System, one-half of the mileage and figures being used in each system.

7—SOUTHERN SYSTEM

Name	Mileage	Gross Earnings	Gross Per Mile
Southern	7,018	$71,974,418	$10,256
Mobile & Ohio	1,135	11,903,351	10,487
Alabama Great Southern	310	5,585,318	17,986
Southern Railway in Mississippi	280	1,100,457	3,933
Cincinnati, New Orleans & Texas Pacific	337	10,983,183	32,565
New Orleans & Northeastern	204	3,859,772	18,946
*Chicago, Indianapolis & Louisville	327	3,836,962	11,734
Alabama & Vicksburg	143	1,701,714	11,924
Vicksburg, Shreveport & Pacific	171	1,667,937	9,729
Florida East Coast	741	7,206,392	9,725
Seaboard	3,446	24,926,111	7,234
Georgia Southern & Florida	400	2,486,248	6,218
	14,512	$147,231,863	$10,145
LINES AT PRESENT CONTROLLED BY TWO OR MORE SYSTEMS			
**Washington Southern	36	$1,647,852	$46,327
†Richmond, Fred. & Potomac	88	3,475,207	39,635

**Also in Systems 3, 4, 5, 6.
†Also in Systems 3, 4, 5, 6.
*This road will be jointly controlled by the Southern System and the Atlantic Coast Line-Louisville & Nashville System, one-half of the mileage and figures being used in each system.

8—GREAT NORTHERN—ST. PAUL SYSTEM

Name	Mileage	Gross Earnings	Gross Per Mile
Great Northern	8,094	$78,548,635	$9,704
*Spokane, Portland & Seattle	277	2,569,401	9,264
Chicago, Milwaukee & St. Paul	10,222	103,164,598	10,093
†Wabash	.....	.....	.....
Duluth, Missabe & Northern	390	10,552,080	27,052
Duluth & Iron Range	279	6,043,443	21,697
St. Louis-San Francisco	4,751	47,113,030	9,917
St. Louis, San Francisco & Texas	239	1,165,568	4,869
**Chicago & Alton	526	8,318,512	15,817
	24,778	$257,475,267	$10,391

*This road will be jointly controlled by the Great Northern-St. Paul System and the Northern Pacific-Burlington System, one-half of the mileage and figures being used in each system.
**This road will be jointly controlled by the Gt. Northern-St. Paul System and the Union Pacific-North Western System, one-half of the mileage and figures being used in each system.
†Lines of this system west of St. Louis. Lines east of St. Louis and total figures are shown in the Buffalo System.

9—NORTHERN PACIFIC—BURLINGTON SYSTEM

Name	Mileage	Gross Earnings	Gross Per Mile
Northern Pacific	6,502	$74,857,779	$11,513
*Spokane, Portland & Seattle	277	2,569,401	9,264
Colorado & Southern	1,100	8,810,988	8,012
Fort Worth & Denver City	454	5,797,831	12,767
Chicago, Burlington & Quincy	9,360	103,814,782	11,091
Colorado Midland	338	1,615,559	4,875
Trinity & Brazos Valley	351	1,002,119	2,853
Wichita Valley	257	1,001,872	3,903
Chicago Great Western	1,460	15,157,101	10,383
Denver & Rio Grande	2,574	24,763,649	9,621
Western Pacific	945	7,458,061	7,894
Kansas City Southern, Texarkana & Ft. Smith	836	11,023,296	13,185
	24,454	$257,872,438	$10,545

*This road will be jointly controlled by the Great Northern-St. Paul System and the Northern Pacific-Burlington System, one-half of the mileage and figures being used in each system.

10—UNION PACIFIC—NORTH WESTERN SYSTEM

Name	Mileage	Gross Earnings	Gross Per Mile
*Union Pacific	3,619	$61,986,599	$17,126
Oregon Short Line	2,235	24,780,729	11,087
Oregon-Washington & Navigation	2,032	17,939,712	8,829
Los Angeles & Salt Lake	1,158	11,075,453	9,566

St. Joseph & Grand Island	260	1,908,985	7,340
*Central Pacific	....	.....	.....
Chicago & North Western	8,108	91,542,024	11,291
Chicago, St. Paul, Minneapolis & Omaha	1,753	19,506,801	11,129
**Chicago & Alton	526	8,318,512	15,817
Missouri, Kansas & Texas Mo., Kans. & Tex. of Texas Wichita Falls & Northwestern	3,865	35,340,021	9,144
	23,556	$272,398,836	$11,564

*The Central Pacific has been placed with the Union Pacific-North Western System, but the figures of the Central Pacific are included with those of the Southern Pacific System.

**This road will be jointly controlled by the Union Pacific-North Western System and the Great Northern-St. Paul System, one-half of the mileage and figures being used in each system.

11—ATCHISON SYSTEM

Name	Mileage	Gross Earnings	Gross Per Mile
Atchison, Topeka & Santa Fe	8,627	$114,019,747	$13,217
Northwestern Pacific	472	4,194,169	8,889
Panhandle & Santa Fe	709	5,387,362	7,595
Gulf, Colorado & Santa Fe	1,937	16,296,448	8,411
*Chicago & Eastern Illinois	567	8,178,620	14,415
Texas & Pacific	1,945	19,834,671	10,199
New Orleans, Texas & Mexico	244	1,503,574	6,167
St. Louis, Brownsville & Mexico	548	3,221,309	5,876
International & Great Northern	1,160	10,107,915	8,718
Missouri Pacific St. L. Iron Mt. & Southern	7,348	66,076,724	8,992
	23,557	$248,820,539	$10,562

*This road will be jointly controlled by the Atchison System and the Southern Pacific System, one-half of the mileage and figures being used in each system.

12—SOUTHERN PACIFIC SYSTEM

Name	Mileage	Gross Earnings	Gross Per Mile
*Southern Pacific	6,991	$115,870,170	$16,575
Arizona Eastern	374	3,304,983	8,835
Galveston, Harrisburg & San Antonio	1,356	14,167,759	10,450
Houston & Texas Central	893	7,022,858	7,863
Texas & New Orleans	468	4,683,962	9,998
Houston East & West Texas	191	1,532,556	8,027
Louisiana Western	208	2,580,656	12,422
Morgan's Louisiana & Texas	403	4,999,346	12,398
Kansas City, Mexico & Orient	738	2,522,892	3,420
San Antonio & Aransas Pass	728	4,003,622	5,500
Chicago, Rock Island & Pacific	7,821	74,724,444	9,554
Chicago, Rock Island & Gulf	477	3,264,111	6,846
El Paso & Southwestern	1,028	10,878,268	10,586
St. Louis Southwestern	943	8,500,314	9,011
St. Louis Southwestern of Tex	810	4,410,125	5,441
**Chicago & Eastern Illinois	567	8,178,620	14,415
	23,996	$270,644,686	$11,278

*The Central Pacific has been placed with the Union Pacific-North Western System, but the figures of the Central Pacific are included with those of the Southern Pacific System.

**This road will be jointly controlled by the Atchison System and the Southern Pacific System, one-half of the mileage and figures being used in each system.

13—ILLINOIS CENTRAL—SOO SYSTEM

Name	Mileage	Gross Earnings	Gross Per Mile
Illinois Central	4,768	$70,595,781	$14,807
Yazoo & Mississippi	1,381	14,059,523	10,187
Central of Georgia	1,922	13,163,150	6,847
Minneapolis & St. Louis	1,647	10,590,733	6,437
Minneapolis, St. Paul & Sault Ste. Marie	4,208	32,305,808	7,678
Duluth South Shore & Atlantic	610	3,506,694	5,744
Mineral Range	120	1,030,995	8,591
	14,656	$145,252,684	$9 911
LINE AT PRESENT CONTROLLED BY TWO OR MORE SYSTEMS			
*Western Railway of Alabama	133	$1,341,130	$10,061

*Also in System 6.

Joint Control of New England System

One of the important features of the grouping of the eastern roads in Mr. Oldham's plan is the provision for the joint control of the New England railroads by the four principal eastern systems, all of which reach the New England gateways. On this point, Mr. Oldham says:

The division of the New England roads among the various trunk lines (for example, assigning the Boston & Maine to the proposed New York Central System or the Buffalo System; or the New York, New Haven & Hartford to the Pennsylvania System or the Baltimore-Reading System) would greatly restrict if not entirely eliminate competition and create a monopoly in the respective parts of New England. To preserve and to promote competition to the fullest extent among the roads in the Eastern district west of the Hudson River, with which traffic is interchanged, as well as to maintain the existing routes and channels of trade and commerce, which these roads offer, a common use of all railroad facilities within New England must be preserved for all these systems without discrimination. While the joint ownership or control of the New England lines is not essential in order to maintain the common use of these facilities, so far as competition is concerned, it is essential, nevertheless, to assure facilities adequate to meet the transportation requirements of the district of which they are a part, for sound credit is necessary to maintain adequate facilities, and sufficiency and stability of income are equally necessary to maintain sound credit.

The number of roads involved, the variety of the tonnage interchanged, the differences in the length of haul, and countless other factors make a satisfactory determination of the fair division of the compensation received from this traffic a problem so complex as to be impossible. To what extent the income of the New England roads falls short of an amount sufficient to provide a fair return on their property values, because of unsatisfactory division of joint rates, and to what extent this shortage is due to other factors, it is impossible to say; nor would it be a matter of consequence if there were a common ownership of these properties by all the remaining roads in the same rate-making district, for by the provisions of the Transportation Act it is not essential that all parts of each system, if commonly owned, should be equally self-sustaining, for rates are designed to meet the combined requirements of all systems in the district considered as a whole.

Control of New England Roads

No Burden to Controlling Systems

The ownership and control of the New England roads by these systems—each participating in the ownership in proportion as it benefits by including the New England roads in the district for rate making purposes—would prove no burden to these systems, for the dividends on the additional stock, which it would be necessary to issue to acquire control, would be provided by the increased income received through rates, which are higher because of the inclusion of the factors of cost and property values of the New England roads in the determination of the rates for the whole.

Such a solution of the problem would be the most effective means of preserving and of promoting competition; of maintaining the existing routes of commerce; of providing the credit necessary to assure such facilities as would enable the New England roads to perform the service required of them, not only for New England but for the country at large.

Practicability of Plan

This is not the place to discuss a detailed plan for the transfer of the control of New England roads to these systems. A brief statement will, however, show its practicability. First of all, it would be necessary to determine the equitable interest of each of the New England roads in a unified New England system, and to make such readjustments of capitalization as are necessary to establish substantial uniformity in the financial structures of each of the New England roads. The next step would be to form a holding company, whose stock would be used to acquire the stocks of the New England roads. These stocks could in turn be exchanged by the holding company for stocks of the four systems which are to participate in the joint ownership, the extent of participation of each system being determined largely by the benefit which it would receive by including the New England roads in the same rate-making district. As owners of the stocks of these four systems, the holding company would receive income with which to pay dividends to its own stockholders, the original holders of the New England railroad stocks.

This method of meeting the New England problem has been referred to as remote, inasmuch as the systems which are to purchase control exist only on paper and there is no assurance that the proposed consolidations will ever take place. Pending such consolidations a similar plan of ownership could become operative by dealing with the nine trunk line systems with which business is interchanged. The freight revenues of these nine systems are over 80 per cent of the total of the district, excluding the New England and Pocahontas district. These roads are the principal ones concerned in the division of joint rates, and are also the largest beneficiaries of the higher rates which are made to cover the requirements of the New England roads. The exchange of stocks with these roads on the basis outlined would leave less than 20 per cent of the stocks of the New England roads in the treasury of the holding company unexchanged; this stock could be held until such time as the remaining roads in the district were absorbed by the various systems and then exchanged on a similar basis.

Railway Statistics for Year Ending August 31, 1921

WASHINGTON, D. C.

STATISTICS for the 12 months ending August 31, 1921, compiled by the Bureau of Railway Economics from the returns of the Class I railways to the Interstate Commerce Commission, afford some interesting comparisons of the experience of the first full year under the increased rates put into effect by the Interstate Commerce Commission on August 26, 1920, and also the first year during which the roads operated on their own financial resources after their return by the government, with the previous 12 months, during which the roads were operated by the Railroad Administration for six months and were guaranteed at the same rate for another six months. These statistics show that while, because of the slump in traffic, the full benefits of the rate increase were not realized, the roads still earned more than they did before under the lower rates, and that while they were unable to reduce expenses in proportion to the reduction in traffic, partly because of the wage increase, the expenses were less than they were the year before.

Public Pays Less

They also show that while the operating results were more favorable than during the preceding year (taking the figures as they stand and without considering the amount of deferred maintenance) and although freight rates were approximately 33 per cent and passenger rates 20 per cent higher, so that the earnings of the roads were greater, the public actually paid about $558,000,000 less to the railways during the year ended August 31, 1921, than during the year before. During the previous year in addition to the rates for freight and passenger service the public was paying, largely out of the proceeds of taxation, a guaranty of some $906,000,000 a year in addition to the $5,725,000,000 represented by the total operating revenues of the carriers. The freight and passenger service rendered by the roads was, however, less than for the year before.

For the year ending August 31, 1921, during which there was no guaranty, the total operating revenues of the Class I roads were $6,045,338,100 as compared with $5,724,912,265 for the year before, an increase of $320,425,835 or 5.6 per cent. Freight revenues were $4,279,028,733, an increase of 9.6 per cent, and passenger revenues were $1,258,394,376, an increase of 2.8 per cent. The railways actually earned greater revenues during the first full year in which the advanced rates were in effect than they did the year before, in spite of the decrease in traffic, although when the months of 1921 alone are taken into consideration, omitting the heavy traffic months of August, September, October, November and December, 1920, the revenues were somewhat less than during the corresponding months of 1920.

Operating Expenses Reduced

Total operating expenses for the year were $5,161,760,829, a reduction of $218,876,981 as compared with the preceding year, or 4.1 per cent. Expenditures for maintenance of way and structures decreased 12.3 per cent and for maintenance of equipment 7.1 per cent, while transportation expenses were reduced only 1.1 per cent and traffic expenses increased 33.8 per cent and general expenses increased 12.8 per cent. The net operating revenue, $883,577,271, showed an increase of $539,302,816, or 156 per cent, but taxes took $283,331,368, an increase of 10.4 per cent, and the net railway operating income was $530,655,927 as compared with only $28,548,077 in the previous year. The operating ratio for the year was 85.38 as compared with 93.99 the year before.

REVENUES, EXPENSES AND NET RAILWAY OPERATING INCOME

Month	Total operating revenues	Total operating expenses	Net railway operating income	Rate earned (annual basis) per cent
Sept., 1920....	$616,200,796	$511,482,960	$75,310,311	4.1
Oct., 1920....	642,135,312	526,578,888	86,455,487	4.6
Nov., 1920....	592,130,728	510,501,352	54,343,793	3.3
Dec., 1920....	550,582,381	503,206,889	10,225,583	0.7
Jan., 1921....	470,148,124	443,700,662	Def. 958,399	Def.
Feb., 1921....	405,784,852	385,479,607	Def. 7,378,307	Def.
Mar., 1921....	459,262,510	400,429,308	30,695,192	2.2
April, 1921....	433,357,199	375,698,986	29,248,874	2.1
May, 1921....	444,875,089	380,041,234	37,080,654	2.3
June, 1921....	461,562,317	380,927,429	51,641,014	3.0
July, 1921....	462,849,446	362,841,183	69,298,521	4.5
Aug., 1921....	505,508,274	382,279,070	90,241,103	5.0
	$6,045,338,100	$5,161,760,829	$530,655,927	2.9

Although the net railway operating income represented less than half of the 6 per cent return contemplated by the law, the results show that the relation between expenses and earnings was far better than it was in the previous year, during half of which time the roads were being operated by the government and the other half they were under the six months' guaranty provided by the Transportation Act.

The difference between the $28,000,000 which was actually earned in the year ending August 31, 1920, and the approximately $906,000,000 which was guaranteed by the government, or $878,000,000, therefore has to be made up by taxation and may be added to the $5,725,000,000 which was paid to the roads for service to ascertain what railroad service actually cost the public for that year.

Net Return 2.9 Per Cent

The net return earned by the roads for the year ending August 31, 1921, was 2.9 per cent on the investment, as

INCOME ACCOUNT—CLASS I RAILWAYS AND LARGE SWITCHING AND TERMINAL COMPANIES

Twelve months' period ended August 31, 1921, compared with corresponding period of preceding year:

Account	For twelve months ended August 31			
	1921	1920	Increase, amount	Per cent
Total operating revenues	$6,045,338,100	$5,724,912,265	$320,425,835	5.6
Freight	4,279,028,733	3,905,994,278	373,034,455	9.6
Passenger	1,258,394,376	1,223,979,098	34,415,278	2.8
Mail	97,243,960	*a* 140,515,278	d 43,271,318	d 30.8
Express	99,638,415	161,384,821	d 61,746,406	d 38.3
All other	311,032,616	293,038,790	17,993,826	6.1
Total operating expenses	5,161,760,829	5,380,637,810	d 218,876,981	d 4.1
Maintenance of way and structure	846,960,204	965,207,008	d 118,246,804	d 12.3
Maintenance of equipment	1,394,333,217	1,501,371,407	d 107,038,190	d 7.1
Traffic	84,244,516	62,949,723	21,294,793	33.8
Transportation	2,611,643,541	2,641,408,037	d 29,764,496	d 1.1
General	175,930,003	155,898,834	20,031,169	12.8
All other	48,649,348	53,802,801	d 5,153,453	d 9.6
Net operating revenue	883,577,271	344,274,455	539,302,816	156.6
Taxes	282,331,368	256,538,433	26,792,935	10.4
Uncollectible	1,315,144	1,180,018	135,126	11.5
Operating income	598,930,759	86,556,004	512,374,755	592.0
Equipment rents	Dr. 50,132,744	Dr. 39,446,370	d 10,686,374	d 27.1
Joint facility rents	Dr. 18,142,088	Dr. 18,561,557	419,469	2.3
Net railway operating income	530,655,927	28,548,077	502,107,850	*
Operating ratio—per cent	85.38	93.99	.....	.....
Average mileage represented	235,407.49	234,563.14	844.35	0.4

a Mail revenue affected in 1920 period of approximately $60,000,000, representing back railway mail pay. d Decrease. *More than one thousand per cent.

compared with only a fraction of 1 per cent the year before. This was $571,342,073 less than the amount needed to produce a 6 per cent return. For September, 1920, the first month under the new rates, the net railway operating income was on an annual basis of 4.1 per cent. For October it was 4.6 per cent but it then decreased until for January there was a deficit and in February there was a larger deficit. Since then the rate of return has been gradually increasing and for the month of August it was on a 5 per cent basis. For no month since the rates were increased has the rate of return reached a 6 per cent basis, although the volume of traffic for the last four months of 1920 was greater than it had ever been for the same period of the year.

Maintenance Expenditures Held Down

The net operating income for the year was, however, greater, than it was during either 1918 or 1919 while the roads were under federal control, although during those years the companies were guaranteed. The reduction in operating expenses of $218,876,981 was made in spite of the fact that the increased wages awarded by the Railroad Labor Board in 1920 were in effect until July 1, 1921, when there was a reduction of approximately 12 per cent effective for two months of the 12 here being considered.

The lesser volume of traffic naturally tended to reduce expenses somewhat, although the figures show that there was very little saving in transportation expenses as the percentage of increase in wages was greater than the percentage of decrease in traffic. The reduction in maintenance alone was $225,000,000 and if this had not been made the net return would have been nearly cut in two.

Traffic and operating statistics for the year ending August 31, 1921, are not yet completely available. The train miles showed a decrease of 9.6 per cent and the total car miles a decrease of 6.4 per cent. The loaded car miles decreased 14.8 per cent and the empty car miles increased 14.8 per cent. The net ton-miles of freight, 377,873,635,000, show a reduction of 14 per cent. The average number of cars per train was 36.8 as compared with 35.6 the year before but the average train load was only 671 as compared with 705, although the net tons per loaded car showed an increase from 28.4 to 28.8. The percentage of loaded to total cars was 63.2 as compared with 70 the year before. The car miles per car day also were less than the year before, 23.5 as compared with 24.3. The passenger and passenger mile figures have not yet been compiled but the passenger train miles decreased 2.2 per cent and the passenger car miles increased 5 per cent. For the first seven months of 1921 the passengers carried one mile decreased 17.2 per cent as compared with 1920.

Designing Locomotives for Economical Operation*

Avoiding Waste by Reducing Fuel Consumption and Repair Costs and Eliminating Unnecessary Weight

By James Partington
Estimating Engineer, American Locomotive Company

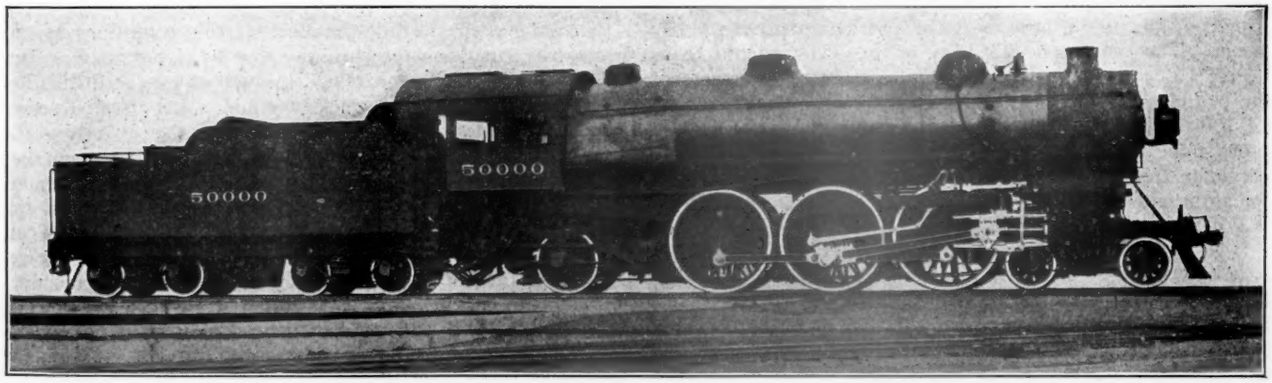
IT SEEMS advisable to consider this subject from the constructive standpoint of indicating what constitutes good design as demonstrated by locomotives in actual service, rather than to attempt to point out the defects in locomotives which do not show maximum efficiency. If any power plant or engine is not properly proportioned for the work it has to do, the most expert skill in operation can reduce only in part the waste resulting from having such equipment in service.

First, considering the design of steam locomotives from the standpoint of new equipment, when a railroad company is in the market for new locomotives its requirements may be met sometimes by duplicating locomotives in service on their road, but adding newly developed attachments which make for increased efficiency and economy. More frequently, however, it will be found that increased traffic, change from wooden to steel cars, improvement in track, roadbed and bridges, etc., will justify and make advisable the adoption of locomotives of a larger and more powerful type.

Then careful consideration must be given to service requirements—maximum loads to be hauled, capacity of cars, approximate proportion of loaded to empty cars per train, grades, curves, running time over divisions, maximum allowable load per axle, location of coal chutes and water tanks, clearances, conditions under which trains must be started, and any other special requirements of the service.

Having determined the drawbar pull necessary, it remains

*A paper to be presented at the meeting of the Railroad Division of the American Society of Mechanical Engineers at New York City on December 9, 1921.



Experimental Pacific Type No. 50,000, Which Established New Records for Power per Unit of Weight

to design a locomotive that will have the following efficiency requirements:

1 A drawbar horse power for the minimum amount of fuel.
2 A drawbar horsepower for the minimum amount of weight of locomotive and tender.
3 A drawbar horsepower for the minimum cost of repairs.

Fuel Economy

As standard practice in modern locomotives, a sectional brick arch in the firebox and a fire-tube superheater should be applied as a means of saving fuel in any class of service. A sectional brick arch is low in first cost, easily applied and easily renewed. It usually accomplishes a fuel saving of from 10 to 12 per cent in coal-burning engines, and about 5 per cent in oil-burning engines.

The very general use of superheaters has gradually brought about improved conditions of cylinder lubrication which now make it possible and desirable for the greatest economy to use a high degree of superheat, 250 to 300 deg. F. now being considered the best practice. A saving of 25 to 30 per cent can be obtained.

The use of feedwater heaters will further conserve fuel, and these are now in general use in continental Europe and are gradually being applied to locomotives in the United States. The saving that can be realized is as much as 12 per cent. The initial cost is considerable, but the effect of the feedwater heater in operation, aside from fuel economy, will be to help reduce other boiler-maintenance charges.

The general proportions of the boiler should also receive careful consideration. For the best results with bituminous coal, the length of the boiler tubes should be approximately within the following limits:

Size of tube, in.	Distance over tube sheet
2	18 ft. 0 in. to 19 ft. 6 in.
2¼	22 ft. 6 in. to 24 ft. 6 in.
2½	28 ft. 0 in. to 30 ft. 0 in.

For many designs of locomotives, a combustion chamber can be provided, and this will help further in the economical production of steam. A generous steam space should be provided, and the throttle designed and located to secure dry steam. The evaporative capacity of the boiler should be as nearly 100 per cent of the maximum steam requirements of the cylinders as the type of locomotive will permit. Based on 100-per cent boiler, the grate area should be sufficient to prevent the maximum coal consumption per sq. ft. of grate per hour from exceeding, for bituminous coal, 120 lb., and for anthracite coal, 55 to 70 lb., depending on size.

When the total coal consumption exceeds 6000 lb. per hr., it is generally necessary to apply an automatic stoker. These have now been so adapted to locomotive requirements that a properly designed stoker will show economy over hand firing, aside from the necessity of its use on account of the coal consumption being greater than the physical capacity of one fireman if the boiler were hand-fired.

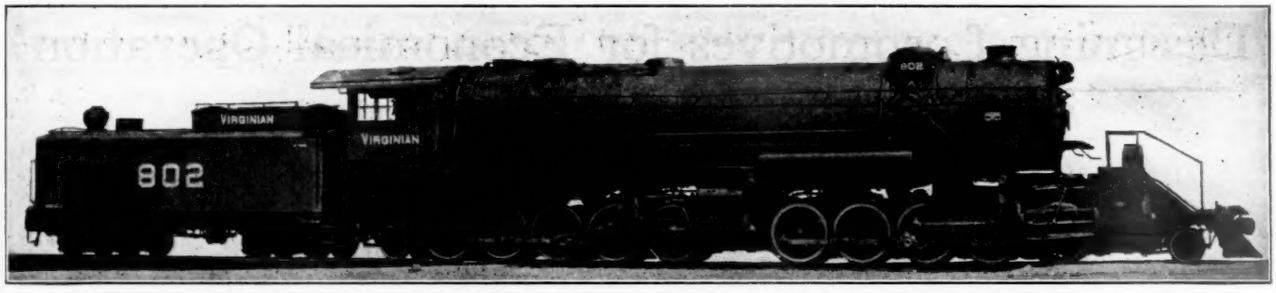
The arrangement of deflector plates and netting in the smoke-box should be carefully adapted to the fuel and combustion conditions, to provide minimum fuel waste and minimum back pressure in the cylinder-exhaust passages with proper provision against fire hazards which might obtain by the throwing of sparks.

The boiler being designed to produce steam at a minimum cost, it is now necessary to design the engine to use this steam with maximum economy.

The cylinder proportions and diameter of the drivers should be such as will develop maximum horsepower at the ruling speeds for train movements. The greatest horsepower of locomotive cylinders will usually be developed within a piston speed ranging from 700 to 1000 ft. per min. Therefore, if other traffic conditions will permit, the operation of trains within these limits should show the greatest economy.

Minimum Weight of Motive-Power Equipment

The weight on the locomotive drivers gives an engine friction, independent of other factors, of 22 lb. per ton. The desirability of avoiding excess weight on the drivers from this standpoint alone is therefore readily apparent. When the type of engine will permit, this weight should not exceed what is necessary to give a satisfactory factor of adhesion; this is usually 4¼ times the maximum tractive power. All weight in excess of this and all other excess weight and excess tender weight should be eliminated, as far as this can be done without detriment to the design of engine and tender. This applies with particular force to the machinery parts of the engine, especially those parts which affect the counterbalance. All saving in weight in these parts usually produces a similar saving in counterbalance weights and a reduction in the dynamic augment, which is very desirable from the standpoint of track and roadbed maintenance.



Virginian 2-10-10-2 Type, the Most Powerful Locomotive in the World

The use of special materials to keep down weight is often amply justified if repair parts can be obtained promptly when required. This, in the past, has often been the cause of delay, but it can be guarded against by carrying a few spare parts in stock ready for renewals. High-tensile alloy steel can frequently be used to advantage for driving axles, crank pins, main and side rods, piston rods, etc.

Occasional steep grades or hard starting conditions at stations may cut down the hauling capacity of locomotives over a division to a serious extent. In such cases, the utilization of the weight on trailer trucks for additional tractive power in starting and at slow speeds may increase the capacity of the locomotive from 10 to 25 per cent, depending on the number of driving wheels and working pressure. It has been demonstrated that a separate steam engine or booster geared to the trailing axle will give this additional traction, and that it can be cut in or cut out very satisfactorily as occasion may require.

This is an item in economical operation worthy of consideration where hauling capacity is restricted by such limitations, and the use of an independent booster may often permit the satisfactory operation of considerably lighter locomotives for service of this character.

Within the limits of this paper, only the major features of design can be outlined briefly, and only such devices as have been carefully tried out and are in successful operation are cited. The writer believes the savings mentioned are well within what may be obtained in practice.

Many other improvements promising further economy in the generation and use of power in the steam locomotive are contemplated and in the experimental stage, but these do not properly come under the scope of our subject as here treated.

Cost of Repairs

It has been pointed out that locomotives and tenders should be designed to produce the required drawbar horsepower with as little excess weight as possible. In this connection, however, due consideration must be given to the question of repairs.

The design of boilers from the standpoint of weight is practically fixed by existing boiler regulations, which provide that locomotive boilers must be operated with a factor of safety of not less than four. Practically all boilers at the present time are designed with a factor of safety of 4½, which leaves a comfortable margin between this and the minimum allowable operating factor.

The maximum stresses in other parts of the locomotive must also be carefully considered, and the parts must be designed to keep these stresses within limits which will eliminate costly failures in service.

Aside from the consideration of stresses, much repair cost can be avoided by adopting designs which reduce the number of parts, as far as reasonably may be, especially where these parts must have bolted connections. Here, however, care must be taken to avoid construction which cannot readily be removed for repairs or renewals or repaired in place with reasonable facility.

Many roads today are giving a great deal of thought to locomotive design along these lines, having especially in mind the desirability of making the engine parts accessible for oiling and inspection; easily removable with proper shop facilities; of the minimum number of pieces and interchangeable with equipment now in service.

The repair-shop facilities must, of course, be kept abreast of the requirements; i. e., as new and larger locomotives are put in service, turntables, cranes, machine tools, etc., must be of sufficient capacity to handle the larger equipment economically.

The repairs of locomotives can often be facilitated and the necessary shop equipment kept down to the minimum by securing from the locomotive builder many parts which he is able to turn out more accurately and more economically than the average railroad shop would be equipped to do. Such parts include: flanged sheets for boiler repairs; flexible and ordinary staybolts; finished bolts and nuts; drop forgings; packing rings for pistons and piston valves and special equipment which requires special tools for its production.

Without attempting to pursue further the design of new locomotives it may be remarked that a study of the special conditions of individual railroads is necessary to secure equipment best suited to the needs of each.

Old Motive-Power Equipment

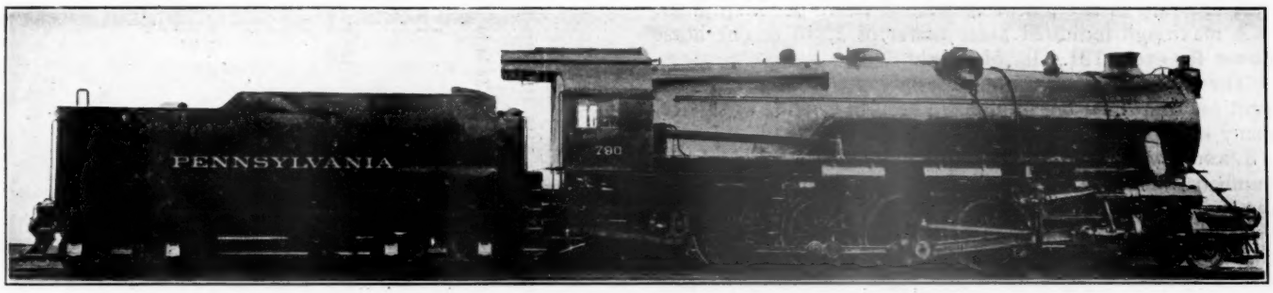
Much waste in locomotive operation can be avoided by making a careful survey of present motive-power equipment which is not giving as economical or efficient service as could be obtained if the engines were modernized. This applies particularly to locomotives where the service conditions demand more power than the present equipment can economically produce. All the suggestions made in regard to the design of new equipment are applicable to a greater or less degree to old equipment, providing the old equipment is not meeting the demands of the service from a power standpoint, or is not furnishing this power economically.

In making a survey of this character care should be taken to determine accurately whether the old equipment will warrant the additional cost of changes and betterments necessary to convert it into up-to-date power. This can be decided by taking the number of years the engines will be retained in service and the increased net return or saving for this period as against the cost involved for changes, interest on the additional investment, increased maintenance, etc.

A comparison should also be made with the results that could be realized by the purchase of new equipment best adapted for the service, as against the cost of contemplated changes in the old equipment.

If these comparisons show a saving in favor of modernizing the old equipment or the purchase of new equipment, every month that the engines are kept in service without doing this will result in a loss that is not recoverable. A few concrete examples of what has been accomplished in service by locomotives designed to yield maximum efficiency may be of advantage. Notable designs, for which data is available, are as follows:

Pacific type passenger locomotive No. 50000 built by the American Locomotive Company; decapod type freight locomotive, Class I1s, built by the Pennsylvania Railroad and heavy Mallet special service locomotive built for the Virginian by the American Locomotive Company.



Pennsylvania Decapod with Short Maximum Cut-off, Which Shows Remarkable Economy Over a Wide Range

American Locomotive Company Engine No. 50000

Locomotive 50000 was built by the American Locomotive Company in 1910. It was designed and constructed at the builder's expense to demonstrate the maximum tractive power with adequate boiler capacity that could be obtained while keeping the adhesive weight below 60,000 lb. per driving axle.

Untrammeled by any outside specifications or the necessity of conforming to any railroad's existing standards, the builders had a free hand to embody in this design their ideas of the best engineering practice. To accomplish the purpose of the design—the maximum capacity per pound of weight—the largest boiler capacity within the predetermined wheel loads was the essential feature.

This end was obtained by eliminating every pound of

weight in all the parts that was not necessary to strength and durability, utilizing the weight thus saved to provide a larger boiler, and by increasing the capacity of the boiler thus secured by combining in one design the most approved fuel saving devices to obtain the utmost economy in boiler and cylinder performance.

Many of the large Pacific type locomotives with drivers 75 in. in diameter and over in operation today greatly exceed locomotive 50000 in total weight.

An average of all of the important engines of this type including locomotive 50000 shows approximately 1,000 lb. less tractive power with an increase of 17,400 lb. in weight with the very slight advantage of only 1½ per cent in boiler capacity. (See table appended.)

Locomotive 50000 delivers one cylinder horse power for every 110.8 lb. of weight and one boiler horse power for every 120.3 lb. of weight.

In actual tests it developed:

An average rate of 2.21 lb. of coal per i.h.p. hour.

A low rate on one test of 2.12 lb. of coal per i.h.p. hour.

An average rate of 16.85 lb. of steam per i.h.p. hour.

A low rate on one test of 16.5 lb. of steam per i.h.p. hour.

A maximum indicated horse power of 2,216 or one horse power for every 121.4 lb. of weight.

The thought occurred that possibly 50000 was built too light and that later on, in order to keep the engine in service, many of the parts might require strengthening.

Locomotive 50000 was purchased by the Erie Railroad and numbered 2509. Wm. Schlafge, mechanical manager of the Erie, states that since the locomotive was received it has been necessary to make very few changes. The guide yoke was reinforced on account of working. Guide yoke blocks were also made solid on the guide yokes. The trailer spring sliding block was changed to the same type as used on the railroad's K-4 Pacific type locomotives. No other changes or alterations have been made. Yet from the time this locomotive was placed in service on the Erie up to March 1, 1920, it had made a total mileage of 351,800.

Ten years of service coupled with 350,000 miles of running demonstrate the strength of the design and the figures given indicate remarkable performance.

Pennsylvania Railroad Class I 1s

While the design of engine 50000 represents the best practice of the present day as measured by the economical operation of passenger locomotives, the development of heavy freight power involves the consideration of other factors that materially affect the design. In 1915 the Pennsylvania Railroad found that for the economical operation of their line a tractive power about 25 per cent in excess of the Mikados then in use was desirable. In working on the design for such an engine, an attempt was made to obtain better economy in performance by a radical departure in cylinder proportions. The accepted practice in proportioning cylinders is to arrange for a cut off of nearly 90 per cent of the stroke, so that the starting torque may be as uniform as possible.

As the adhesive weight limits the cylinder diameter if excessive slipping is to be avoided, it is obvious that on long grades, where the maximum tractive effort is required, the long cut offs use steam in a most uneconomical manner. As the Pennsylvania has several such long grades on its line, the new design adopted involved a limitation of the cut off to about 50 per cent in place of 90 per cent and an increase in the cylinder diameter to give sufficient torque at this cut off to fully utilize the adhesive weight. The expected increase in economy of coal and water due to the shorter cut off has been fully realized. Not only has the engine shown remarkable efficiency, but the economy under wide ranges of load is especially remarkable.

We are fortunate in having available a very complete test

LARGE PACIFIC TYPE LOCOMOTIVES NOW IN OPERATION IN THE UNITED STATES

Engine	50000														Average
Cylinders	27 in. by 28 in.	27 in by 28 in.	25 in. by 28 in.	25 in. by 30 in.	27 in. by 28 in.	26 in. by 28 in.	26 in. by 28 in.	23½ in. by 26 in.	25 in. by 28 in.	25 in. by 28 in.	25 in. by 28 in.	25.6 in. by 28 in.
Drivers—dia.	79	80	79	75	77	79	75	79	77	80	75	77.5
Boiler—dia.	76¾	78½	76¾	79⅞	75⅞	78	78⅛	70¾	74	72	69	....
Pressure	185	205	210	200	185	210	200	200	200	200	185	197.5
Firebox, length	114⅛	126	126	111⅛	114⅛	126⅛	114⅝	108⅛	110	120⅝	108⅛	....
Firebox, width	75¼	80	108¼	84⅜	84	108¼	84¼	75¼	72	84	70¼	....
Tube, length	22-0	19-0	17-3	18-6	22-0	19-0	20-6	21-6	20-0	22-0	20-0	....
Wheel base driving	14-0	14-0	14-0	13-2	14-0	13-10	13-0	14-0	13-0	13-4	13-6	....
Wheel base engine	35-7	36-6	36-0	34-9	36-2	35-8	34-11	36-6	34-4	35-8	34-9	....
Weight of drivers	172,500	201,800	192,500	181,500	178,000	181,400	194,000	184,500	169,500	165,000	168,500	180,500
Weight of engine	269,000	308,900	302,000	299,000	295,000	291,400	287,000	282,000	280,000	279,500	269,000	286,400
Heat. surf. tubes and flues	3,808	3,746.8	2,830	3,232	3,534.7	3,454	3,939	3,193	3,380	3,720.9	2,644	2,970	....
Heat. surf. firebox	248	288.6	351	297.6	239.8	303	259.6	231	240	266.4	282	230	....
Heat. surf. total	4,056	4,035.4	3,181	3,529.6	3,774.5	3,757	4,198.6	3,424	3,620	3,987.3	2,926	3,200	3,640.8
Superheating surface	897	1,154	645	803	962	816	970	838	830	783.5	652	778	....
Grate area	59.8	70.0	95.0	65.0	66.5	94.8	67	56.5	55	70.4	94.5	52.7	{61.6* / 70.6
Tractive power	40,600	41,845	39,500	42,600	41,700	42,770	42,900	30,900	40,700	38,600	37,200	36,700	39,670
Cyl. h.p.	2,427	2,690	2,365	2,252	2,427	2,556	2,434	1,990	2,312	2,252	2,252	2,083	2,336
Boiler h.p.	2,235	2,467	2,244	2,282	2,104	2,311	2,398	1,958	2,112	2,267	1,950	1,869	2,186
Weight per cyl. h.p.	110.8	114.8	127.7	132.8	121.5	114.0	117.9	141.7	121.1	124.1	121.5	129.1	122.8
Weight per boiler h.p.	120.3	125.2	134.6	131.4	140.2	126.1	119.7	144.0	132.6	123.3	140.3	143.9	131.8
Boiler percentage	92.0	91.7	95.0	101.0	86.7	90.5	98.5	98.2	91.5	100.5	86.8	90.0	93.5

*Is an average of the soft coal burning engine only. The figure 70.6 is the average for all the engines, including the hard coal burners.

of this engine, made on the testing plant at Altoona. (Bulletin 31, P. R. R. Testing Plant 1919, copyrighted.) This test shows a water rate of 15.4 lb. per i.h.p. hour with a total i.h.p. of 3,080 at 40 per cent cut off and a coal consumption of 2.9 lb. The lowest coal consumption recorded is 2.00 lb. per i.h.p. hour, obtained at an output of 1,777 i.h.p. and a cut off of 30 per cent.

The thermal efficiency of the locomotive is also high and well sustained over a large range, a maximum of 8.1 per cent being attained at an output of 1,777 i.h.p., and the range being from 6.1 per cent at 776 i.h.p. to 5.3 per cent at 3,486 i.h.p. with an average of over 7 per cent for the usual operating conditions.

The highest drawbar pull recorded in these tests is 76,211 lb. at a speed of 7.4 m.p.h., but in road service a pull of 80,640 lb. has been recorded at 7.2 m.p.h. The indicated tractive effort plotted from a card taken at 7.4 miles per hour at 55 per cent cut off is slightly over 90,000 lb.

This design gives a calculated figure of 88.9 lb. per cylinder horse power, the lowest on record. During the tests an indicated horse power of 3,486 was developed, giving a weight of 106.2 lb. per horse power. The weight per boiler horse power does not compare as favorably, however, as it is 145.4 lb. The Belpaire firebox contributes materially to this excess.

Virginian 2-10-10-2 Type Locomotives

The large 2-10-10-2 Mallet engines for the Virginian were designed to meet their unique conditions. This road was built as an outlet to certain bituminous coal fields of West Virginia. Practically the entire revenue business is confined to hauling coal to the shipping docks at Sewall's Point, the west-bound revenue freight being negligible in amount, as only one town of any importance, Roanoke, is located on the line. As the development of the coal fields proceeded the tonnage to be handled increased rapidly, rising from 2,141,009 in 1911 to 7,621,555 in 1920, and in order to handle the business at a profit the maximum attainable capacity in motive power was demanded. Having fixed on 100 cars as the maximum number that could safely be handled in a single train, the car capacity increased to 120 tons, it was estimated that a locomotive of 147,000 lb. tractive power would be needed to haul the train from Princeton to tidewater, a helper being used for a grade of .6 per cent ten miles long over the Alleghenies. The 2-10-10-2 Mallets were designed to meet these conditions and their operation has been very successful. They have handled trains of 16,000 tons on a .2 per cent grade with the lowest consumption of coal per ton mile ever recorded. Unfortunately, accurate tests of coal and water per dynamometer horse power are not available owing to the fact that there is no dynamometer of adequate capacity to be had at present.

However, on May 25, a train of 15,725 tons behind the tender was hauled from Princeton to Roanoke at a rate of 26.9 lb. of coal per 1,000 ton-miles, and on May 27 a 75 car train of 12,070 tons showed the same figure for coal per thousand ton-miles.

One of these engines has hauled a train of 110 cars weighing 17,250 tons from Victoria to Sewall's Point, which is believed to be the heaviest train ever handled by one engine. The ruling adverse grade was .2 per cent.

The principal dimensions of the three locomotives cited and a comparison of the horse power characteristics—calculated by the American Locomotive Company's method—are embodied in the following table:

MODERN MAXIMUM EFFICIENCY LOCOMOTIVES

	No. 50000		
Road	Erie	Virginian	Pennsylvania
Type	4-6-2	2-10-10-2	2-10-0
Fuel	Bituminous coal	Bituminous coal	Bituminous coal
Boiler, type	Conical connection	Extended wagon top	Conical connection
Boiler, diameter	76¼ in.-87 in.	105½-118½ in.	87-90½ in.
Weight on drivers, lb.	172,500	617,000	342,050
Weight on truck, lb.	49,000	29,750	32,000
Weight on trailer, lb.	47,000	35,000	.....
Weight, total, lb.	269,000	684,000	371,800
Driving wheel diam.	79 in.	56 in.	62 in.
Cylinders	27 in. by 28 in.	30 in. and 48 in. by 32 in.	30½ in. by 32 in.
Boiler pressure, lb. per sq. in.	185	215	250
Tractive power, lb.	40,600	147,200	90,000
Factor of adhesion	4.25	4.08	3.80
Cylinder horse power	2,427	5,040	4,182
Grate, length and width	114 in. by 75¾ in.	144 in. by 108¼ in.	126 in. by 80 in.
Grate area, sq. ft.	59.7	108.7	70.01
Tubes, number	207	381	244
Tubes, length	22 ft. 0 in.	25 ft. 0. in.	19 ft. 1 in
Tubes, spacing	¾ in.	⅞ in.	⅝ in.
Tubes, thickness	No. 11 B. W. G.	No.11 B.W.G.	.125
Tubes, diameter	2¼ in.	2¼ in.	2¼ in.
Flues, number	36	70	48
Flues, diameter	5½ in.	5½ in.	5½ in.
Flues, thickness	3/16 in.	No. 9 B.W.G.	.18
Combustion chamber—length	None	36 in.	42 in.
Brick arch	Security	Gaines	Security
Heating surface—firebox, sq. ft.	248	532	290
Heating surface tubes—water side, sq. ft.	2,672	5,592	2,731
Heating surface flues—water side, sq. ft.	1,136	2,511	1,313
Heating surface total, sq. ft.	4,056	8,635	4,334
Boiler horse power	2,250	4,800	2,553
Steam rate, lb. per hp. hour	20.8	19.7	20.8
Coal rate, lb. per hp. hour	3.25	3.1	3.25
Superheater, number of units	36	70	42
Superheater, diameter	1½ in.	1½ in.	1½ in.
Superheater, heating surface	879	2,120	1,418
Tender weight in running order, lb.	161,500	214,300	182,000
Tender capy. coal, ton	14	12	17½
Tender capy. water, gal.	8,000	13,000	9,000
Weight of locomotive in lb. per cylinder hp.	110.6	135.7	88.9
Weight of locomotive in lb. per boiler hp.	119.6	142.5	145.4
Steam rate—lb. per hp. hour.	16.5	.....	15.4
Coal rate—lb. per hp. hour	2.12	.....	2.0

From the Youngstown Vindicator

Can't Expect Much Rhythm of the Dancers Until the Orchestras Get Together

How to Better Bad Railroad Conditions

Do Railway Officers Spend Too Much Time Lobbying in Washington and Not Enough in Managing the Properties?

By George N. Brown
Formerly Chief Examiner of the Interstate Commerce Commission

HABIT, or state of mind, is responsible for many things in the conduct of the daily lives of men. So with the railroads of the country. Their managers have acquired the habit of going to the government for everything they desire. In carrying out that state of mind railroad managers, during the past decade have stood about the street corners in the region of the Interstate Commerce Commission or the Capitol in Washington with hats in hand asking for more.

The trouble with the railroad transportation systems of the country is that the managing heads have lost their initiative. They refuse to do anything, or even to propose to do anything, to relieve a particular situation that may exist on their lines without first consulting some administrative authority. No one has ever computed the time and money that the railroads of the country have expended in the last ten years in attempts to get their Uncle Samuel to dole out to them some law which would yield them more money.

At one time, a few years ago, I counted over 100 railroad officials, from presidents down, sitting about the hearing room of the Interstate Commerce Commission for a period of 10 days listening to experts explain figures as to past and prospective railroad earnings. There is no other business in this country that would think of allowing so many of its directing officials to remain absent from business for so long a period of time. It has become the settled habit of many railroad officials to spend most of their time in Washington, or in riding to and from Washington. This habit has grown in spite of the fact that the Interstate Commerce Commission has all along insisted, and the courts of the country have repeatedly held, that the management of the railroads has not been committed by the Congress to any administrative body.

Some time ago an employee of the Interstate Commerce Commission, in a responsible position, told me that he had become, as a practical matter, traffic manager of at least three of the more important railroad systems of the country; and that the habit of many railroad officials was to come to him in person, or write him at length, with regard to substantially every tariff or transportation problem that confronted them.

It may be of interest to investigate how the habit that now controls the railroads originated. Previous to the year 1910 the Interstate Commerce Commission had very limited powers respecting the control of rate initiation by the carriers of the country. It is true that beginning July 1, 1907, the commission was given the right to employ examiners who could hear and take evidence in formal complaints, and that orders by the commission with respect to the justness and reasonableness of rates and rules were to be observed under heavy penalties. About that time complaints by shippers began to increase rapidly and the commission was continually engaged in adjusting rates and rules, and rate relationships.

It became the habit of railroad managers to advise complaining shippers that they were powerless to remedy alleged injustice because the Interstate Commerce Commission would not permit them to do so. Thus the "buck was passed" from railroad managers to the commission. When informal complaint was made to the commission, and there were untold thousands of them immediately after the passage of the amendments of 1906 to the Act, the shippers were advised, in most instances, that the subject matter was one over which the commission had no control in the first instance. A few carriers of the country accepted the law of 1906 in its true intent and spirit, but many of them were antagonistic, and set deliberately to work to make it unpopular with shippers. They placed the blame for their own shortcomings with the Interstate Commerce Commission, and in every way possible delayed righting manifest wrong in rules, regulations, and rate adjustments.

The same attitude was assumed with respect to tariff publications. Rules issued by the commission were either misconstrued by many carriers, or their rate and tariff experts spent much time and energy in endeavors to convince the commission that rules should be modified or abrogated. It became the habit of traffic managers and rate experts of the carriers to journey to Washington to dispute a ruling or insist that a particular construction should be put upon it.

Executives Haunt Washington

When the law of 1910 was passed, which gave the commission power to suspend a rate or schedule of rates for a maximum period to ten months the railroad managers became much concerned. The fact that they brought the law upon themselves made no difference in their consternation at its passage. The fact was that just before the Congress adjourned in the year 1910 railroad managers announced publicly that they proposed to make a general increase of freight rates throughout the country. Thereupon Congress passed the law giving the commission suspension power. When that law was passed railroad managers at once surrendered all their independence of action, and the habit of coming to Washington on every imaginable pretext that had been growing all these years became a fixed and unchanging state of mind.

"But, what else is there for us to do?" exclaimed a freight traffic manager of a western railroad when an Interstate Commerce Commissioner told him the matter he had come 2,000 miles to talk about could have been settled without any action of the commission. This commissioner replied: "I say to you that wherever your rules and regulations, or your rates, are unjust and unfair you have the undoubted right to change the same. Make the proper change and advise the commission why you did it. The commission is entitled to the presumption that it has some sense of what is right and proper."

Impetus was given to the habit of haunting Washington by railroad managers when state railroad commissions became numerous and active. It was assumed by railroad managers that the Interstate Commerce Commission was constituted as their special guardian against what they termed was unjust treatment by state commissions. The tune changed a bit but the song was the same. That is to say, the managers were in no way to blame for any situation, because they were bound, as they asserted, hand and foot by the laws of the states and the nation. They ceased to function as railroad managers. They became special pleaders before the Washington authorities. Instead of honestly making efforts to right real wrongs, or straighten out complainants who had fancied grievances, they shifted the entire burden to Washington. It presented an easy way out for them. The habit once formed has grown until it has come to govern the railroad managerial conduct. The effort has

not been to insure adequate and efficient service, but to convince some people that the Congress which passed regulatory laws was really ignorant of the true situation, and that the Interstate Commerce Commission was a parsimonious and arbitrary administrative body. One-half the time and effort spent in this mode of procedure, if expended in honest effort to conduct a good railroad, with a view to render patrons adequate and efficient service, would have brought great results. Such a thing never seems to have occurred to the railroad managers who had acquired the habit of laying all their troubles before Washington authorities.

No consistent or persistent effort seems to have been made to meet state commissions in any spirit of co-operation. Where certain railroads did not openly treat such commissions with contempt, they resorted to court proceedings before the Interstate Commerce Commission to block all orders made by them. Is it any wonder that state commissions have grown to be antagonistic in their attitude toward representations made to them by the railroads?

Executives Have Become Expert Lobbyists

The trouble with the railroads of the country today is that the managing heads are not and have not been engaged in railroad business. They have become expert lobbyists, and put in their time seeking concessions from constituted authorities.

What is the remedy? Has the habit become so fixed that it is now impossible for our railroad managers to conduct their railroad business independently of governmental suggestion? I do not think so. Railroad managers should get back to their jobs and stay there. Continued waiting about Washington for governmental favors can lead to but one thing, and that government ownership and control. In my opinion that would end in disaster, and would be destructive of all advancement in our transportation facilities.

It rests with railroad managers whether that shall be the result of present tendencies and methods. It is true that railroad managers can not under existing law continue old methods. No sensible railroad man believes that there will ever be a return to unbridled, cut-throat competition, and midnight tariffs; and none of them desire a return to such days. The broad-minded and far-seeing managers, and there are a few of them, admit that many of the regulatory provisions of the law have resulted in good. It was only when the managers began to supinely abdicate their functions as directors of the policies of the different carrier systems that there arose a manner of doing business that has resulted in inefficiency. There must come a complete change in the state of mind of the railroad managers of this country. Their first thought should be satisfaction of patrons. As a class the shippers of the country are just and reasonable men. They know that they must depend on transportation to insure that their products shall reach markets. They stand ready to render assistance to all earnest, honest efforts of railroad managers to give them adequate facilities and service.

It is a law that pervades our entire social fabric that honest effort will be encouraged and rewarded. The man who fails in business, but who takes off his coat and goes honestly to work to retrieve his fallen fortunes will find helping hands extended to him in every direction. On the other hand, if an individual meets adversity with downcast countenance, and gives up all effort, he will be shunned by his fellows and hurried to the poorhouse.

What evidence in the past decade have our railroad managers given to the public that they were really engaged in trying in good faith to conduct efficient railroad transportation? Haunting the halls of Congress and those of the Interstate Commerce Commission is not the business of railroad managers. Many of the railroads do not reach Washington by more than a thousand miles of intervening territory. Has it ever occurred to these men that the millions of money they have spent in propaganda, and in the employment of attorneys to represent them in Washington might have been spent on the railroad systems to better advantage? As a matter of fact the energies and much of railroad money has been expended in recent years in forcing the camel's head further into the public tent. Having a taste of the food stored in the tent they divested themselves of their managerial functions, and ceased to run their railroads.

The Alternative

The alternative is to take the public into their confidence. Convince the people of America that honest efforts are being made to serve the public and there can be no shadow of doubt of the result. The average citizen is fair-minded and just. He only needs to be shown. A fraction of the time and money that has been expended in Washington, if used to show the people the true situation, would be an effective means of changing conditions for the better. The business men, the industrial managers, the farmers, and all others who use transportation, are not railroad haters at heart. A few men prominent in political life have made considerable noise in recent years, and like the lone coyote on a hill have scared some people. They do not, and they have not represented the calm current of public opinion.

I doubt if there are many men in this country who know personally so many railroad officials, from presidents down, as I do. I count them all my friends. In saying what I have said I am only administering a jolt that I hope may help to throw railroad machinery into gear again. That it is sadly out of gear now no posted man will deny. The extent to which the loss of initiative and the failure of railroad managers to assume and perform their function is responsible for the grind in railroad machinery but the remedy is at hand. The proper spirit and the honest effort is bound to make conditions better.

I have not discussed the question whether the laws that have been passed provide too much regulation by federal power, and leave too little freedom to railroad managers. There were no need to do that. The laws are on the statute books, and must be obeyed. The only hope of their modification is in a change of public sentiment that gave them birth. Public sentiment can only be properly directed when it is apparent that our railroad managers are really at work trying in good faith to give adequate and efficient service. Neither have I mentioned the saturnalia of railroad regulation that took place during the war. It was all of it unnecessary, and much of it disastrous to the morale of railroad organization. But that state of chaos has passed into history leaving behind a long train of evil effects. Supineness on the part of those who now have our railroads in charge will not avail anything, and will inevitably lead to worse conditions to come.

Railroad managers everywhere must get back on the job. Serve the people who live along the rails the best that can be done with what facilities are at hand. Keep in close touch with the public and evince a sympathetic interest with their troubles connected with transportation. In a very short time support will come where there is now indifference or actual antagonism. Managing a railroad is a man's sized job, and it cannot be well performed in whole or in part, from Washington. Effort should be made to correct conditions at the foundation. Work from the top down is ineffective, and the results disappointing. Railroad managers everywhere will find enough to do if they will stick to the job of managing. Washington affairs can well be left for the adjustment that is bound to come from an enlightened public conscience.

Attend to the railroads as managers thereof should, and treat the patrons as fellowmen of a common country should be treated, and for well directed, earnest effort the railroads are bound to experience an indulgent public sentiment which in due course will serve to secure to them as a whole every return which they can rightfully demand.

General News Department

The Senate on October 27 adopted an amendment to the tax bill providing for a flat 15 per cent tax on the net income of corporations as a substitute for the excess profits tax on net incomes above 8 per cent on their capital.

A bill to require 12 months' notice before a line of railroad can be abandoned has been introduced in the Senate by Senator Harris of Georgia, who said that several hundred miles of short lines in his state were being abandoned or were in danger of being junked.

The directors of the National Railway Appliances Association will meet in the office of the secretary, C. W. Kelly, Peoples' Gas building, Chicago, on Tuesday next, November 8, to assign exhibit space for the eleventh annual exhibit, which will be held in the Coliseum, Chicago, on March 13-16, 1922, at the time of the convention of the American Railway Engineering Association.

The Chicago, Rock Island & Pacific has started preparations for the celebration of its seventieth anniversary which occurs on October 10, 1922. Inquiries have recently been sent to the various employees associations and officers of the company asking that suggestions and plans be submitted for a fitting commemoration of the occasion. It has already been suggested that the first Rock Island train, which made its initial run between Chicago and Joliet, Ill., in 1852, be re-constructed.

J. E. Fairbanks, general secretary, has sent out a blank for the letter ballot under which members of the American Railway Association are to vote for members of the board of directors; and in connection therewith, by circular No. 2200, the directors recommend, for the better geographical representation of members on the board, that the number of directors be increased from 18 to 21. This involves changes in article 7 of the constitution and sections 3, 5 and 19 of the by-laws.

The Elmira Division of the Pennsylvania Railroad reports that for a period of 56 days, August 13 to October 7, there was not a single minute's detention to a passenger train on the division due to engine failures. For a period of 39 days, August 28 to October 6 inclusive, there were no delays from car failures. In making this record 752 trains were operated a total distance of 69,154 miles. Ninety-seven per cent of the trains maintained schedule time. This division is 143½ miles long, and contains many sharp curves. There are two long and steep grades of two per cent each, in both directions.

An attempt to wreck passenger train No. 5 on the Grand Trunk on October 29 near Lapeer, Mich., nearly succeeded when a section of rail was removed and but for the alertness of the engineer in slowing down a serious wreck would have occurred. All cars except the Pullmans were thrown from the track and one man was seriously injured. A car at the head of the train containing horses went over the embankment, as did two baggage cars following, the first day coach stopping on the edge of the embankment. It is believed the track was torn up shortly before the train arrived and a crazed individual taken in custody near the wreck admits attempting to ditch the train.

Samuel M. Felton, president of the Chicago Great Western, on November 1, issued a signed bulletin to farmers in the district served by the Great Western, stating that the farmers have a real grievance under present conditions of railroad transportation and at the same time are placed in a position much the same as that of the railroads. In the bulletin Mr. Felton said: "The farmer has a real grievance because the prices he receives for his products have declined more than have the prices he must pay for almost everything he buys. Some blame their troubles largely on the railroads. Freight rates, they say, are the cause of low prices for grain and live stock. The real cause lies much deeper. The decline in the prices of farm products began before freight rates were advanced and would have occurred if rates never had been advanced. It is due to world-wide changes resulting from the transition from war to peace." Continuing, he says: "The railways have the same grievance as the farmers. The rates the railways are getting, although they have been advanced, are much lower in proportion than the cost of almost everything the railways must buy." In closing Mr. Felton said: "The managements of the railroads are making every effort to reduce expenses so that rates can be reduced later. Some reductions of rates already are being made. There is no other way than by reductions in expenses to secure general reductions in rates that will not be ruinous to the railways and make them unable to render to the farmers the transportation service they need. Those who obstruct reduction of expenses not only hurt the railroads but the farmers as well."

Central Railway Club's Annual Dinner

The Central Railway Club will hold its thirty-first annual dinner at 7 o'clock Thursday evening, November 10, at the Hotel Iroquois, Buffalo, N. Y.

Atlantic City for 1922 A. S. T. M. Meeting

A questionnaire recently sent out by the executive committee of the American Society for Testing Materials to ascertain the wishes of the members regarding the 1922 meeting, resulted in the selection of Atlantic City, N. J., for the place of the annual meeting, to be held sometime in the latter part of June provided suitable arrangements could be made for that time.

September Earnings

The net railway operating income of the Class I roads for September apparently will be less than that for August, when the roads earned $90,000,000. Returns thus far available for 183 roads show a net of $79,484,869, an increase as compared with September, 1920, of 13.5 per cent. The total operating revenues were $462,213,000, a decrease of 19.5 per cent, and the operating expenses were $351,977,000, a decrease of 26.2 per cent.

American Society of Civil Engineers' Nominees

The nominating committee of the American Society of Civil Engineers has presented the following nominations for officers to be elected at the annual meeting: President, J. R. Freeman, Providence, R. I.; vice-presidents, C. E. Grunsky, San Francisco, Cal., and Robert Ridgway, New York City; treasurer, O. E. Hovey, New York City; and directors, C. M. Holland, New York City; J. J. Yates, bridge engineer, Central of New Jersey, Jersey City, N. J.; F. E. Winsor, Providence; J. N. Chester, Pittsburgh, Pa.; A. J. Dyer, Nashville, Tenn., and W. L. Huber, San Francisco.

Kansas City Southern Holds Freight Claim Prevention Conference

Approximately 125 officers and employees of the Kansas City Southern attended the fifth annual freight claim prevention conference at Sulphur Springs, Ark., on October 15, every department of the railroad being represented. Papers were presented on a wide variety of topics having to do with the reduction of claims, these papers being discussed at length. Among the topics considered were: The operation of warehouses and the proper storing of freight in cars; the detection and prevention of robberies; the co-ordination of activities of connecting line roads; defective equipment; elimination of rough handling and dealing with the public.

Reclamation Savings on the Rock Island

The Chicago, Rock Island & Pacific has effected a saving of $1,301,970 through its general reclamation plant at Silvis, Ill., during the three years ending with 1920. From each ton of scrap the Company was able in 1918 to reclaim $6.75 worth of useful material, the entire saving for that year amounting to $467,947; in 1919, $8.10 in value was reclaimed from each ton of scrap, and the year's saving was $473,623; in 1920, $6.07 represented the value gained from each ton and $360,398, the total amount saved during that year. The amount and value of the material reclaimed at the general reclamation plant is steadily decreasing, according to C. H. Rost, general storekeeper, because of the work of committees on each division; a large amount of the reclamation work is now done locally. While the savings have thus been increased, no definite figures have been compiled to show the total secured in this manner.

A. S. M. E. to Publish Life of George Westinghouse

The American Society of Mechanical Engineers has announced that the biography of George Westinghouse, published under the auspices of the society, will be completed before the end of the year. The story of Mr. Westinghouse's rise from a modest early environment to the leadership of many great industrial enterprises and the position of acknowledged pre-eminence among American engineers is told by Colonel Henry G. Prout, a former business associate who was well acquainted with him for nearly 30 years and was an intimate friend during the last 12 years of his life. A limited number of copies of the special subscription edition will be issued early in December. Following it, the publishers will issue a popular edition that will be out about February, 1922.

Operating Statistics for August

The Interstate Commerce Commission's monthly bulletin of operating statistics for 165 Class I roads for the month of August shows a total of 30,387,000,000 net ton miles of freight handled, as compared with 42,734,000,000 in August, 1920. The average miles per car per day was 22.7 as compared with 27.5, the net tons per loaded car averaged 27.4 as compared with 29.8 and the net ton miles per car day 400 as compared with 558. The net tons per train averaged 670 as compared with 762. The train speed was 11.6 miles per car as compared with 10.3. The traffic density was 4,200 net ton miles per mile of road per day as compared with 5,917 in August, 1920. For the eight months ended with August the traffic density was 3,922 as compared with 5,179.

Gompers Criticizes Strike Settlement

Samuel Gompers, president of the American Federation of Labor, attacked bitterly the settlement of the railroad strike, declaring that "the cards had been stacked against the workers." He especially attacked Attorney General Daugherty for statements indicating that recourse would be taken to the courts if the strike order became effective. Mr. Gompers said "the strike will not take place—now." Mr. Gompers declared that the statement of the Labor Board that there are 1,300 cases still pending before it is one of the worst indictments that could be brought against the Esch-Cummins law and he contended that there should be a revival of the old system where employer and employee got together to adjust grievances without interference by a government tribunal. "Introduction of government machinery," he said, "means introduction of the element of force and compulsion, which is half the difficulty at present."

Railroads Protest Increased Tax Rate

Seven of the nine railroad companies protesting against increased tax assessments in the state of Iowa, as noted in the *Railway Age* of September 24 (page 589), were upheld in every contention made before the Federal Court, at Des Moines, on October 28. Adjustment injunctions were denied in two cases, those of the Wabash and the Atchison, Topeka & Santa Fe. The court in the seven successful complaints ruled out the entire increases in taxes ordered by the state executive council in 1921, and ordered a further reduction of 10 per cent in the assessed valuation in force during the previous year. The reduction in the assessed valuation ordered by the court totals in excess of $14,000,000 or equivalent to more than $55,000,000 on the actual valuation as fixed by the executive council. The court ruled that "intentional, deliberate assessment of different classes of property at different percentages of actual valuation results in inequality of treatment." The roads' contention that land assessments, as compared with railroad assessments, are too low, was upheld. The roads which won their contentions and the maximum amounts per mile which can be assessed, are: the Chicago & North Western, $8,730; the Chicago, Burlington & Quincy, $7,650; the Chicago, Milwaukee & St. Paul, $7,335; the Chicago, Rock Island & Pacific, $6,975; the Minneapolis & St. Louis, $4,140; and the Ft. Dodge, Des Moines & Southern, $3,330.

Norfolk & Western Safety Record

The Norfolk & Western reports the total number of persons killed on that road in 1920 as 84; a figure which marks a remarkable decrease from 1912, when the total was 229; while at the same time there has been a steady increase in the volume of freight traffic. These data are shown in the figures below, taken from a graphic diagram issued by the Safety Commission of the road:

Year	Millions of ton miles	Persons killed
1912	9,021	229
1913	9,883	193
1914	9,508	160
1915	11,022	177
1916	12,829	152
1917	13.195	112
1918	12,889	144
1919	10,592	99
1920	11,660	84

C. H. Blakemore, chairman of the Safety Commission, in addressing this circular to employees, says: "Had the number of persons killed increased in exact proportion to the increase in the volume of business, the year 1920 alone would have seen 296 persons killed—*instead of* 84. Does the safety movement deserve your personal support?"

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Railway Development Association

Semi-Annual Meeting

J. F. Jackson, Savannah, Ga., secretary of the American Railway Development Association, announces the semi-annual meeting of the association, which is to be held at Hotel Sherman, Chicago, on Thursday and Friday, November 10 and 11. As in the case of former meetings, the industrial section and the agricultural section will meet separately for some of the sessions; and roundtable discussions will fill up a large part of the program. The principal speakers on Thursday morning are S. R. Guard, J. F. Jarrell and J. D. McCartney. On Thursday afternoon the industrial section will have roundtable discussions on shippers' guides; how should they be made and what is their value; and on industrial surveys, what they ought to include and whether the information should be published. The immigration and colonization specialists will listen to the "Wisconsin plan" of colonization, described by B. G. Packer, and to other papers on immigration and land settlement.

On Friday morning, Hon. C. S. Ucker will speak on government land reclamation, and the industrial section will discuss community development, with special reference to the Neosho plan, and the Hub Club plan.

The agricultural roundtable on Friday morning will be presided over by J. M. Jones. On Friday afternoon the industrial roundtable will listen to a report on conferences with the American Railway Engineering Association as to sidetrack leases, etc.; and there will be a marketing roundtable presided over by L. D. Fuller. H. B. Rogers will describe the produce market of New York City, with illustrations by motion pictures.

Floods Damage Canadian Roads

Canadian railroads in the vicinity of Vancouver, B. C., following heavy rains during the week of October 23 in the Cascade Mountains, have suffered heavy flood damages. The most serious damage to the Canadian Pacific was at Coquitlan, B. C., 17 miles east of Vancouver, where two 80-ft. spans across the Coquitlan river were carried out. The Coquitlan terminal, which is the freight terminal for Vancouver, was entirely under water, making it impossible to use yard or engine house facilities, while slides and washouts in the Fraser river canyon held up transportation through the canyon. Other damage occurred at Yale creek, where one pier of a bridge crossing that stream was carried out, while 17 miles east of North Bend a small lake in the mountain overflowed and sent a stream down across the tracks, carrying out the fill for a distance of 200 ft. to a maximum depth of 110 ft. It was necessary to detour traffic over the Great Northern, to Huntington, B. C. With the exception of the crossing of the Coquitlan river the line should be in operation by November 2. On the Kettle Valley line washouts and slides in Coquihalla Pass held up transportation from October 28 until the night of November 2. Slides and washouts in the Fraser Valley held up operation on the Canadian National on October 29, the most serious damage being done at Lytton, B. C. Operation on this road is expected to be resumed by November 3. It is reported that serious damage to the Pacific Great Eastern between Clinton, B. C., and Squamish, will make that line impassable for from one to two weeks.

Walker D. Hines Returns From Europe

Walker D. Hines, formerly director general of railroads, recently returned to this country after having spent over 16 months in Europe as the arbitrator to decide upon the distribution, ownership and valuation of shipping on the principal rivers which were covered by provisions of the peace treaty. Mr. Hines has rendered decisions on the shipping on the Danube, Rhine and Elbe rivers and they have been received with satisfaction by the different countries and interests involved. Most of the work has now been completed, except for some final details, and excepting the questions relative to the Oder river, on which a decision is delayed because of questions involved in the Upper Silesian controversy. Mr. Hines has opened an office in New York for the general practice of law and has left his executive assistant, Brice Clagett, in charge of the remaining work abroad, but he retains his position as arbitrator and expects to return to Europe to make the final decisions. Mr. Hines has been in Washington this week and has been familiarizing himself with the railroad situation as it has developed in his absence; but he declined to discuss the subject for publication at this time. He went to Washington to represent the Western Union Telegraph Company in the valuation case of the Kansas City Southern, but the case was postponed.

Mr. Hines said that railroad transportation conditions had been improved much more in France than in eastern Europe, where there has been much confusion resulting from the delays in allocating the rolling stock that was seized and otherwise scattered during the war. This has led to much trans-shipment at the frontiers and has resulted in stimulating the river traffic.

Meetings and Conventions

The following list gives names of secretaries, dates of next or regular meetings and places of meetings:

AIR BRAKE ASSOCIATION.—F. M. Nellis, 165 Broadway, New York City. Exhibit by Air Brake Appliance Association.

AIR BRAKE APPLIANCE ASSOCIATION.—Fred W. Venton, 836 So. Michigan Ave., Chicago. Meeting with Air Brake Association.

AMERICAN ASSOCIATION OF DEMURRAGE OFFICERS.—F. A. Pontious, Superviser of Demurrage and Storage, C. & N. W. Ry., Chicago.

AMERICAN ASSOCIATION OF DINING CAR SUPERINTENDENTS.—L. A. Stone, C. & E. I. Ry., Chicago.

AMERICAN ASSOCIATION OF ENGINEERS.—C. E. Drayer, 63 E. Adams St., Chicago.

AMERICAN ASSOCIATION OF GENERAL BAGGAGE AGENTS.—E. L. Duncan, 332 So. Michigan Ave., Chicago. Next meeting, November 16-18, San Antonio, Tex.

AMERICAN ASSOCIATION OF PASSENGER TRAFFIC OFFICERS.—W. C. Hope, C. R. R. of N. J., 143 Liberty St., New York. Annual meeting, November 14 and 15, French Lick Springs Hotel, French Lick Springs, Indiana.

AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—J. Rothschild, Room 400, Union Station, St. Louis, Mo. Next convention, August 23-25, 1922, Kansas City, Mo.

AMERICAN ELECTRIC RAILWAY ASSOCIATION—J. W. Welsh, 8 W. 40th St., New York.

AMERICAN RAILROAD MASTER TINNERS', COPPERSMITHS' AND PIPE FITTERS' ASSOCIATION.—C. Borcherdt, 202 North Hamlin Avenue, Chicago, Ill.

AMERICAN RAILWAY ASSOCIATION.—J. E. Fairbanks, General Secretary, 75 Church St., New York, N. Y. Next regular meeting, November 16, Waldorf-Astoria, New York.

Division I—Operating.

Freight Station Section (including former activities of American Association of Freight Agents). R. O. Wells, Freight Agent, Illinois Central Railroad, Chicago, Ill.

Medical and Surgical Section. J. C. Caviston, 75 Church Street, New York.

Protective Section (including former activities of the American Railway Chief Special Agents and Chiefs of Police Association), J. C. Caviston, 75 Church St., New York, N. Y.

Telegraph and Telephone Section (including former activities of the Association of Railway Telegraph Superintendents). W. A. Fairbanks, 75 Church St., New York, N. Y. Next meeting, March 21-23, Richmond, Va. Annual meeting, September 20-22, 1922, Colorado Springs, Colo.

Safety Section. J. C. Caviston, 75 Church St., New York.

Division II—Transportation (including former activities of the Association of Transportation and Car Accounting Officers). G. W. Covert, 431 South Dearborn St., Chicago, Ill.

Division III—Traffic, J. Gottschalk, 143 Liberty St., New York.

Division IV—Engineering, E. H. Fritch, 431 South Dearborn St., Chicago, Ill. Next convention, March 14-16, Chicago. Exhibit of National Railway Appliances Association, March 13-16.

Construction and Maintenance Section. E. H. Fritch.

Electrical Section. E. H. Fritch.

Signal Section (including former activities of the Railway Signal Association). H. S. Balliet, 75 Church St., New York, N. Y.

Division V—Mechanical (including former activities of the Master Car Builders' Association and the American Railway Master Mechanics' Association). V. R. Hawthorne, 431 South Dearborn St., Chicago, Ill. Annual convention, June 14-21, 1922, Atlantic City, N. J. Exhibit by Railway Supply Manufacturers' Association.

Equipment Painting Section (including former activities of the Master Car and Locomotive Painters' Association). V. R. Hawthorne, 431 South Dearborn St., Chicago, Ill.

Division VI—Purchases and Stores (including former activities of the Railway Storekeepers' Association). J. P. Murphy, General Storekeeper, New York Central, Collinwood, Ohio.

Division VII—Freight Claims (including former activities of the Freight Claim Association). Lewis Pilcher, 431 South Dearborn St., Chicago, Ill.

AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, C. & N. W. Ry., 319 Waller Ave., Austin Station, Chicago. Exhibit by Bridge and Building Supply Men's Association.

AMERICAN RAILWAY DEVELOPMENT ASSOCIATION.—J. F. Jackson, Central of Georgia, Savannah, Ga. Next meeting, November 10 and 11, 1921. Hotel Sherman, Chicago. Annual meeting, May 10-12, 1921, Denver, Colo.

AMERICAN RAILWAY ENGINEERING ASSOCIATION.—(Works in co-operation with the American Railway Association, Division IV.) E. H. Fritch, 431 South Dearborn St., Chicago. Next convention, March 14-16, Chicago. Exhibit by National Railway Appliances Association, March 13-16.

AMERICAN RAILWAY MASTER MECHANICS' ASSOCIATION.—(See American Railway Association, Division 5.)

AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—R. D. Fletcher, 1145 East Marquette Road, Chicago. Exhibit by Supply Association of the American Railway Tool Foremen's Association.

AMERICAN SHORT LINE RAILROAD ASSOCIATION.—T. F. Whittelsey, Union Trust Bldg., Washington, D. C.

AMERICAN SOCIETY FOR STEEL TREATING.—W. H. Eiseman, 4600 Prospect Ave., Cleveland, Ohio.

AMERICAN SOCIETY FOR TESTING MATERIALS.—C. L. Warwick, University of Pennsylvania, Philadelphia, Pa.

AMERICAN SOCIETY OF CIVIL ENGINEERS.—E. M. Chandler (acting secretary), 33 W. 39th St., New York. Regular meetings 1st and 3d Wednesdays in month, except July and August, 33 W. 39th St., New York.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—Calvin W. Rice, 29 W. 39th St., New York.

Railroad Division, James Partington, American Locomotive Co., 30 Church St., New York. Next meeting, December 9, 1921, 29 W. 39th St., New York.

AMERICAN TRAIN DISPATCHERS' ASSOCIATION.—C. L. Darling, Northern Pacific Ry., Spokane, Wash.

AMERICAN WOOD PRESERVERS' ASSOCIATION.—George M. Hunt, Chemist, Forest Products Laboratory, Madison, Wis. Next meeting, January 24-26, Hotel Sherman, Chicago.

ASSOCIATION OF RAILWAY CLAIM AGENTS.—H. D. Morris, Northern Pacific R. R., St. Paul, Minn. Next meeting, May 17-19, 1922, Montreal.

ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—Jos. A. Andreucetti, C. & N. W., Room 411, C. & N. W. Sta., Chicago. Exhibit by Railway Electrical Supply Manufacturers' Association.

ASSOCIATION OF RAILWAY EXECUTIVES.—Thomas De Witt Cuyler (chairman), 61 Broadway, New York, N. Y.

ASSOCIATION OF RAILWAY SUPPLY MEN.—A. W. Clokey, 1658 McCormick Bldg., Chicago. Meeting with International Railway General Foremen's Association.

ASSOCIATION OF RAILWAY TELEGRAPH SUPERINTENDENTS.—(See American Railway Association, Division I.)

ASSOCIATION OF TRANSPORTATION AND CAR ACCOUNTING OFFICERS.—(See American Railway Association, Division II.)

BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.—A. J. Filkins, 3346 S. Artesian Ave., Chicago. Meeting with convention of American Railway Bridge and Building Association.

CANADIAN RAILWAY CLUB.—W. A. Booth, 53 Rushbrooke St., Montreal, Que.

CAR FOREMEN'S ASSOCIATION OF CHICAGO.—Aaron Kline, 626 North Pine Ave., Chicago. Regular meetings, 2d Monday in month, except June, July and August, New Morrison Hotel, Chicago.

CAR FOREMEN'S ASSOCIATION OF ST. LOUIS, MO.—Thomas B. Koeneke, 604 Federal Reserve Bank Bldg., St. Louis, Mo. Meetings, first Tuesday in month at the American Hotel Annex, St. Louis.

CENTRAL RAILWAY CLUB.—Harry D. Vought, 26 Cortlandt St., New York. Regular meetings, 2d Thursday in November and 2d Friday in January, March, May and September, Hotel Statler, Buffalo, N. Y. Annual dinner, Thursday evening, November 10, at 7:30 p. m

CHIEF INTERCHANGE CAR INSPECTORS' AND CAR FOREMEN'S ASSOCIATION.—W. P. Elliott, Terminal Railway Association of St. Louis, East St. Louis, Ill.

CHIEF INTERCHANGE CAR INSPECTORS' AND CAR FOREMEN'S SUPPLY MEN'S ASSOCIATION.—D. B. Wright, 34th St. and Artesian Ave., Chicago, Ill. Meeting with Chief Interchange Car Inspectors' and Car Foremen's Association.

CINCINNATI RAILWAY CLUB.—W. C. Cooder, Union Central Bldg., Cincinnati, Ohio. Next meeting, November 8, Hotel Sinton, Cincinnati, Ohio.

EASTERN RAILROAD ASSOCIATION.—E. N. Bessling, 614 F St., N.W., Washington, D. C. Annual meeting May 11, 1922, New York Railroad Club.

FREIGHT CLAIM ASSOCIATION.—(See American Railway Association, Division VII.

GENERAL SUPERINTENDENTS' ASSOCIATION OF CHICAGO.—A. M. Hunter 321 Grand Central Station, Chicago. Regular meetings, Wednesday preceding 3d Friday in month, Room 856, Insurance Exchange Bldg., Chicago.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.—W. J. Mayer, Michigan Central R. R., Detroit, Mich. Exhibit by International Railroad Master Blacksmiths' Supply Men's Association.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' SUPPLY MEN'S ASSOCIATION.—George P. White, 747 Railway Exchange, Chicago. Meeting with International Railroad Master Blacksmiths' Association.

INTERNATIONAL RAILWAY FUEL ASSOCIATION.—J. G. Crawford, 702 E. 51st St., Chicago. Next annual meeting, May, 1922, Chicago. Exhibit by International Railway Supply Men's Association.

INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—Wm. Hall, 1061 W. Wabasha Ave., Winona, Minn.

INTERNATIONAL RAILWAY SUPPLY MEN'S ASSOCIATION.—C. W. Sullivan, Garlock Packing Co., 326 W. Madison St., Chicago. Meeting with International Railway Fuel Association.

MAINTENANCE OF WAY MASTER PAINTERS' ASSOCIATION.—E. E. Martin, Union Pacific R. R. Room No. 19, Union Pacific Bldg., Kansas City, Mo. Annual convention, 1922, Buffalo, N. Y.

MASTER BOILER MAKERS' ASSOCIATION.—Harry D. Vought, 26 Cortlandt St., New York. Next convention, May 23-26, 1922, Hotel Sherman, Chicago.

MASTER CAR AND LOCOMOTIVE PAINTERS' ASSOCIATION.—(See A. R. A., Division V.)

MASTER CAR BUILDERS' ASSOCIATION.—(See A. R. A., Division V.)

NATIONAL ASSOCIATION OF RAILWAY TIE PRODUCERS.—Warren C. Nixon, Western Tie & Timber Co., 905 Syndicate Trust Bldg., St. Louis, Mo. Annual meeting, January 26 and 27, Hotel Sherman, Chicago.

NATIONAL ASSOCIATION OF RAILWAY AND UTILITIES COMMISSIONERS.—James B. Walker, 49 Lafayette St., New York.

NATIONAL FOREIGN TRADE COUNCIL.—O. K. Davis, 1 Hanover Square, New York.

NATIONAL RAILWAY APPLIANCES ASSOCIATION.—C. W. Kelly, People's Gas Bldg., Chicago. Annual exhibition, March 13-16, Chicago, at convention of American Railway Engineering Association.

NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meetings, 2d Tuesday in month, excepting June, July, August and September.

NEW YORK RAILROAD CLUB.—Harry D. Vought, 26 Cortlandt St., New York. Regular meetings, 3d Friday in month, except June, July and August, at 29 W. 39th St., New York.

PACIFIC RAILWAY CLUB.—W. S. Wollner, 64 Pine St., San Francisco, Cal. Regular meetings, 2d Thursday in month, alternately in San Francisco and Oakland.

RAILWAY ACCOUNTING OFFICERS' ASSOCIATION.—E. R. Woodson, 1116 Woodward Building, Washington, D. C.

RAILWAY BUSINESS ASSOCIATION.—Frank W. Noxon, 600 Liberty Bldg., Broad and Chestnut Sts., Philadelphia, Pa.

RAILWAY CLUB OF PITTSBURGH.—J. D. Conway, 515 Grandview Ave., Pittsburgh, Pa. Regular meetings, 4th Thursday in month, except June, July and August, Americus Club House, Pittsburgh, Pa.

RAILWAY DEVELOPMENT ASSOCIATION.—(See Am. Ry. Development Assn.)

RAILWAY ELECTRICAL SUPPLY MANUFACTURERS' ASSOCIATION.—J. Scribner, General Electric Co., Chicago. Annual meeting with Association of Railway Electrical Engineers.

RAILWAY EQUIPMENT MANUFACTURERS' ASSOCIATION.—R. J. Himmelright, 17 East 42nd St., New York. Meeting with Traveling Engineers' Association.

RAILWAY FIRE PROTECTION ASSOCIATION.—R. R. Hackett, Baltimore & Ohio R. R., Baltimore, Md.

RAILWAY REAL ESTATE ASSOCIATION.—R. H. Morrison, C. & O. Ry., Richmond, Va.

RAILWAY SIGNAL ASSOCIATION.—(See A. R. A., Division IV, Signal Section.)

RAILWAY STOREKEEPERS' ASSOCIATION.—(See A. R. A., Division VI.)

RAILWAY SUPPLY MANUFACTURERS' ASSOCIATION.—J. D. Conway, 1841 Oliver Bldg., Pittsburgh, Pa. Meeting with A. R. A., Division V.

RAILWAY TELEGRAPH AND TELEPHONE APPLIANCE ASSOCIATION.—G. A. Nelson, 30 Church St., New York.

ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—P. J. McAndrews, C. & N. W. Ry., Sterling, Ill. Annual convention September, 1922, Cleveland, Ohio. Exhibit by Track Supply Association.

ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo. Regular meetings, 2d Friday in month, except June, July and August.

SIGNAL APPLIANCE ASSOCIATION.—F. W. Edmunds, Sunbeam Electric Manufacturing Company, New York City. Meeting with American Railway Association, Signal Section.

SOCIETY OF RAILWAY FINANCIAL OFFICERS.—L. W. Cox, Commercial Trust Bldg., Philadelphia, Pa.

SOUTHERN AND SOUTHWESTERN RAILWAY CLUB.—A. J. Merrill, P. O. Box 1205, Atlanta, Ga. Regular meetings, 3d Thursday in January, March, May, July, September and November, Piedmont Hotel, Atlanta.

SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—E. W. Sandwich, Western Ry. of Ala., Atlanta, Ga.

SUPPLY ASSOCIATION OF AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—H. S. White, 9 N. Jefferson St., Chicago.

TRACK SUPPLY ASSOCIATION.—W. C. Kidd, Ramapo Iron Works, Hillburn, N. Y. Meets with Roadmasters' and Maintenance of Way Association.

TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, 117 East 98th St., Cleveland, Ohio. Exhibit by Railway Equipment Manufacturers' Association.

WESTERN RAILWAY CLUB.—Bruce V. Crandall, 14 E. Jackson Boulevard, Chicago. Regular meetings, 3d Monday each month except June, July and August.

Traffic News

Coal Production

Apprehension of consumers over the effects of a possible railroad strike is named by the Geological Survey in its weekly bulletin as no doubt the chief cause of sharp increase in coal production in the week ended October 22. The total output of bituminous is estimated at 10,993,000 net tons, an increase of 1,302,000 tons in a single week. A further sharp increase was indicated by telegraphic reports of loadings on October 24 and 25.

National Industrial Traffic League's Annual Meeting

The program has now been completed for the annual meeting of the National Industrial Traffic League which will be held at the Hotel Sherman, Chicago, on November 9 and 10. Among the reports to be presented will be those by (1) the Executive Committee, on the proposed consolidation of the carriers; the railroad funding bill; the liability clause in railroad leases and sidetrack agreements and the policy of the United States Railroad Administration respecting payment of reparation awards; (2) the Car Demurrage and Storage Committee, on proposed changes in demurrage rules and uniform storage rules; (3) the Classification Committee; (4) the Bill of Lading Committee, covering changes in the proposed uniform bill of lading and the proposed through export bill of lading; (5) the Express Committee, discussing the showing of the valuation on packages, receipts for charges collected from consignees, perfect package month and the period for filing claims for loss and damage; (6) the Rate Construction and Tariffs Committee, on the simplification of tariffs, delay in receiving tariffs from the carriers and the publication of rates on net ton vs. gross ton basis; (7) the Inland Water Ways Committee; (8) the Freight Claim Committee, on the six months' provision in the bill of lading for filing loss and damage claims, uniformity in handling concealed loss and damage claims, perfect package month and (9) the Legislative Committee.

A number of regular and special committees will also present reports, in addition to which F. E. Winburn, special representative, Bureau of Claims Prevention, American Railway Association, will discuss claims prevention.

New England Roads Request

Re-Argument of Division Case

Counsel for the New England roads have filed a petition with the Interstate Commerce Commission requesting an opportunity to reargue before the commission the case involving their application for an order requiring the roads west of New England to increase the divisions of through rates accruing to the New England lines. The petition says that it was never anticipated that the commission would deny the relief asked on such an interpretation of the transportation act, because it runs contrary to the broader view which the commission has always taken when similar questions have arisen in general rate advance cases. If the commission has the power to make general rate advances, although some of the individual rates may thus be made unreasonable, it is contended that the commission has the power to require a general readjustment of divisions. It is also declared that Congress has provided no method of helping weak roads to earn a living rate except by readjusting their divisions.

"The commission, through the increase of rates in the eastern rate group," the petition declares, "has taxed the public for the support of an efficient transportation system, and the public is paying the tax; but the majority of the commission finds itself helpless to make the second part of the act work; and while it has raised the necessary fund to maintain an efficient transportation system in the eastern rate group, it declares it is unable to so apply this fund as to accomplish the only result which justified raising it."

The petition says that the trunk lines will not voluntarily give up anything, and if divisions can be readjusted only one by one, then the act is unworkable; and the New England roads have failed to find the relief that Congress intended for them.

Commission and Court News

Interstate Commerce Commission

The commission has suspended until March 1, the operation of a supplement to a New York, New Haven & Hartford tariff, which provides for the cancellation of joint through class rates between points in Connecticut, Massachusetts, New York, and Rhode Island, and points on the Long Island Railroad, within the borough of Brooklyn, N. Y., leaving combination rates applicable instead, and resulting in increasing certain rates.

The commission has further suspended until December 19, the operation of certain schedules which propose to eliminate the application of the present rates on coal from Western Maryland mines to points on the Baltimore & Ohio and its connections over the route through Cherry Run, W. Va., and Westport, Md., making applicable instead combination of locals via these routes, and establish instead, in connection with the present through rates, specific routing via Cumberland and Bellington, W. Va.

The Interstate Commerce Commission has issued a decision approving a revision of class and commodity rates in the territory west of the Cascade mountains, extending from Portland, Ore., on the south to Vancouver, B. C., on the north, except as to the proposed cancellation of carload commodity rates and certain relationships previously approved by the commission as to classes c, d, and e. The proposed rates were filed by the railroads to become effective May 27 and were suspended. Of the 7,152 class rates named in the schedules, 50.1 per cent represented increases, 34.3 per cent remained unchanged and 15.6 per cent represented reductions. Most of the class rates are for intrastate application between points in Washington. An order will be entered requiring the cancellation of the suspended schedules and discontinuing the proceeding without prejudice to the establishment on five days' notice of rates in conformity with the findings of the commission.

Missouri Rates Increased

The Interstate Commerce Commission has issued its decision in the Missouri intrastate rate case, in which the Missouri commission, while authorizing increases in the state rates to correspond to the general advance made by the Interstate Commerce Commission last August, excepted the rates on coal, coke, brick and articles basing thereon, sand, gravel, stone, crushed rock, chats, cinders, lime, cement plater and articles basing thereon, and petroleum oil and its products. The Missouri commission limited the increases to 70 per cent over the rates in effect on June 24, 1918. The federal commission finds this a discrimination against interstate commerce and orders the railroads to make increases to correspond with the increases in interstate rates.

Personnel of Commissions

Theodore F. Laist, architect in the Bureau of Valuation, Central District, Interstate Commerce Commission, has resigned, and has taken a position as Chicago representative of the National Lumber Manufacturers' Association, No. 111 West Monroe street, Chicago.

A. C. Hasbrouck, head of the division of accounts and statistics of the New York State Public Service Commission, at Albany, for many years, has resigned, to take a position with H. C. Hopson, accountant, 61 Broadway, New York City. Mr. Hasbrouck has been on important committees of the National Association of Railway and Utilities Commissioners, and was chairman of the committee which prepared the uniform system of accounts for electrical and gas companies last year.

Foreign Railway News

Increase in Value of Exports of Electric Locomotives

During the first nine months of 1920, electric locomotives valued at $844,130 were exported from this country, according to Commerce Reports. In 1921 for the same period the value of electric locomotives exported was $1,506,877.

Batignolles Tunnel at Paris to Go

The Batignolles tunnel in Paris, which is the approach to St. Lazare station, will be opened into a deep cut which will necessitate the building of walls over 50 ft. in height and ranging from 10 ft. to 14 ft. in thickness, according to The Engineer (London).

Australian Railway Officers in America

Alfred D. J. Forster, assistant chief mechanical engineer of the New South Wales Government Railways, and William H. Armstrong, assistant to the locomotive superintendent of the same line, are in this country for the purpose, it is said, of arranging for the purchase of American railway supplies.

German Rolling Stock Allocated to Danzig Territory

The following German rolling stock has recently been definitely allocated to the Danzig territory by the Interallied Commission sitting in Berlin, according to a report from Consul William Dawson: locomotives, 116; passenger cars, 172; baggage cars, 35; freight cars, 1,950; and electric locomotives, 2.

England's Minister of Transport to Resign

LONDON.

Sir Eric Geddes, Minister of Transport of Great Britain, resigned from his position on October 15. Sir Eric is still to work as chairman of the committee charged to reduce government expenditure in all departments, which task is a heavy one under present conditions.

A Correction

In the *Railway Age* of October 18 (page 694) some statistics of railway mileage in Spain were given, as appearing in Commerce Reports. These figures were in error, according to A. G. Goldsmith, chief of the Western European Division of the Bureau of Foreign and Domestic Commerce. The mileage, according to Mr. Goldsmith's corrected figures are:

Five ft. 6 in. gage,	single track	6,773 miles
	double track	243 miles
Meter (39.37 in.) gage,	single track	2,119 miles
	double track	16 miles

Jamaica Railway Extension Offers Opportunity For Sales of American Supplies

The government of Jamaica has, according to the American consul at Kingston, authorized the government railway to extend its line a distance of nine miles from Chapelton, exclusive of sidings. The director of the railway, it is said, will be glad to receive bids from American concerns for construction materials. Some materials needed include a steam shovel, shovels, picks, track jacks and various track tools. The Jamaica Government Railway is, it is pointed out, a standard gage line built by an American firm and much of the equipment is of American manufacture. The consul urges that a representative of any American concern interested in the contract be sent to Jamaica, as the island is relatively close to the United States. Further information can be secured by addressing Major Lewis Thomas, Director of the Jamaica Government Railway, Kingston, Jamaica.

Equipment and Supplies

Freight Cars

THE ILLINOIS CENTRAL is inquiring for 2,000 composite gondola cars.

THE PAULISTA RAILWAY (Brazil) is inquiring for 180 underframes for freight cars of 30 metric ton capacity and 1.60 meter gage.

THE PENNSYLVANIA TANK LINE, Sharon, Pa., has ordered 200 tank cars of 10,000 gal. capacity from the Pennsylvania Tank Car Company.

THE DENVER & RIO GRANDE, reported in the *Railway Age* of September 17 as inquiring for 1,000 70-ton gondola cars, has ordered 700 of these cars, with an option of 300 additional, from the Pressed Steel Car Company.

THE CHICAGO, MILWAUKEE & ST. PAUL, reported in the *Railway Age* of October 8, as inquiring for 2,500 gondola cars of 50-ton capacity, has ordered 1,000 of these cars from the Bettendorf Company and 1,500 from the Haskell & Barker Car Company.

THE SIAMESE STATE RAILWAYS will receive bids until 2 p. m., January 16, 1922, at the city of Bangkok, Siam, for 20 flat cars of 28 metric tons capacity. Bids are also wanted until 2 p. m., February 1, 1922, for 500 pairs of wheels and axles. Specifications and drawings may be obtained from C. P. Sandberg, 143 Liberty street, New York.

Passenger Cars

THE NEW YORK CENTRAL is asking for prices on the repair of 100 passenger cars.

THE NEW YORK, ONTARIO & WESTERN is inquiring for from 20 to 25 steel passenger coaches, 3 baggage cars and 3 combination baggage and mail cars.

Iron and Steel

THE SOUTHERN PACIFIC has ordered 44,600 tons of open hearth rails from the Tennessee Coal, Iron & Railroad Company, most of which is to be 90-lb. rail.

Machinery and Tools

THE NILES-BEMENT-POND COMPANY, New York, has received an order for machine shop tools to cost about $70,000, from the Central Railway of Brazil.

Miscellaneous

THE NEW YORK, NEW HAVEN & HARTFORD is having 15 Mountain type and 15 Santa Fe type locomotives equipped with closed type feed water heaters made by the Superheater Company, New York.

THE JAMAICA GOVERNMENT RAILWAYS will shortly require a steam shovel of 1 or 1½ yd. capacity; shovels; picks; track jacks; rail tongs and other track tools and construction materials for a line extension involving an expenditure of some $688,000. For further details see item under Foreign Railway News on another page of this issue.

THE EMPRESS OF JAPAN, one of the Canadian Pacific steamers, last week began her 155th voyage across the Pacific. She has covered 2,500,000 miles in the Canadian Pacific Service, equal to nearly one hundred times around the earth. This does not include her four years' war service.

Railway Construction

AMERICAN RAILWAY EXPRESS.—This company will construct an addition to its stable at Tulsa, Okla., and remodel its present structure, at an estimated cost of $16,000.

ATCHISON, TOPEKA & SANTA FE.—This company will accept bids until November 13, for the construction of an addition to its Alvarado Hotel at Albuquerque, N. M., to cost about $300,000.

BOSTON & MAINE.—This company has awarded a contract to the Ogle Construction Company, Chicago, for coal handling machinery to be used in connection with a coaling station which will soon be erected at Concord, N. H., by company forces.

GALVESTON, HARRISBURG & SAN ANTONIO.—This company contemplates the enlargement of its shops at El Paso, Texas, in connection with the installation of new equipment in these shops.

GREAT NORTHERN.—This company has been petitioned by the Greater Rosebud Association, representing four counties in Southern South Dakota, known as the Rosebud Area, to extend its line from Huron, S. D., about 150 miles in a southwesterly direction, across the Missouri river, into this area.

ILLINOIS CENTRAL.—This company has applied to the city council of West Frankfort, Ill., for permission to construct a freight depot and remodel its present passenger station at that city. This work is estimated to cost about $60,000.

MISSOURI, KANSAS & TEXAS.—This company has awarded a contract to H. D. McCoy, Cleburne, Tex., for the re-construction of its freight station at Oklahoma City, Okla., which was recently destroyed by fire.

MISSOURI, KANSAS & TEXAS.—This company has awarded a contract to T. L. Johnson, Sedalia, Mo., for the reconstruction of its reclamation plant at Parson, Kan., which was destroyed by fire on September 17, at an estimated loss of $85,000.

NACOGDOCHES & SOUTHEASTERN.—This company contemplates extending its line 28 miles southwest from Nacogdoches, Texas, to a junction with the Atchison, Topeka & Santa Fe.

NEW YORK, NEW HAVEN & HARTFORD.—This company has contracted with the American Creosoting Company, New York, for the treatment of its cross-ties and other timber. The plant will be provided by the latter company adjacent to the Cedar Hill terminal of the New Haven at New Haven, Conn., and will have a capacity of about 1,500,000 ties a year.

PENNSYLVANIA.—The Eastern Coal Dock Company, Cleveland, Ohio, is building a coal thawing plant for this company at South Amboy, N. J.

PORTLAND, ASTORIA & PACIFIC.—This company, a subsidiary of the Oregon-American Lumber Company, Portland, Ore., control of which has been acquired recently by the Central Coal & Coke Company, Kansas City, Mo., is constructing, through its parent company, a railroad line 32.5 miles long, extending from Wilkesboro, Ore., into a large timber tract owned by the above company. Work is expected to be completed early next year. It is estimated that the entire cost, including equipment, will be approximately $2,600,000. The Portland, Astoria & Pacific is a corporation organized under the laws of Delaware, with a capital of $2,500,000.

SOUTHERN PACIFIC OF MEXICO.—This company contemplates the extension of its line from Tepic, Cal., to Guadalajara, Mex., a distance of about 100 miles. This extension will afford a connection with the National Railways of Mexico.

ST. LOUIS-SAN FRANCISCO.—This company which was noted in the *Railway Age* of October 1 (page 646), as receiving bids for the construction of a one-story machine shop, 103 ft. by 40 ft., at St. Louis, Mo., has awarded a contract for this structure to the Globe Construction Company, St. Louis, Mo.

TEXAS & PACIFIC.—This company, in conjunction with the Missouri Pacific and the Kansas City Southern, has prepared tentative plans for a union station at Texarkana, Ark.

Supply Trade News

R. A. Ogle, president of the Ogle Construction Company, Chicago, died on November 2, at his home in Chicago from the effects of an operation.

Ben L. Whitney, formerly with the Byers Co., has opened an office at 528 Detroit Savings Bank building, Detroit, Mich., and will represent the **Orten & Steinbrenner Company** in that territory.

Walter C. Carroll, assistant general sales manager of the American Sheet & Tin Plate Company at Pittsburgh, Pa., has been appointed vice-president of the Inland Steel Company, Chicago, effective November 10.

C. H. Hobbs has been appointed assistant general manager of sales of the Detroit Seamless Steel Tube Company of Detroit, Michigan. Mr. Hobbs was in the service of the Lackawanna Steel Company for over 14 years and for the last five years was district representative in charge of its Detroit office.

Morris B. Brewster has formed a corporation under the name of **Morris B. Brewster, Inc.,** with headquarters at 332 South Michigan boulevard, Chicago, to handle metallic packing, mechanical devices, such as Edson diaphragm pumps and similar articles. Associated with Mr. Brewster in the new company are **W. B. Leach, J. G. Platt** and **F. M. Weymouth,** of Boston.

The **Bucyrus Company,** South Milwaukee, Wis., announces the removal of its New York City office to suite 728, 30 Church street, with **E. G. Lewis** in charge as eastern sales manager, effective December 1. **M. J. Woodhull** has been appointed Central sales manager to succeed Mr. Lewis in charge of the Chicago office, 622 McCormick building, and **E. R. Weber** has been appointed northern sales manager, at Minneapolis, 1224 McKnight building, to succeed **J. N. Gawthrop,** who will become associated with Mr. Lewis in New York.

F. L. Kellogg, manager of the New York branch at 25 West Forty-third street, New York City, of the **Electric Storage Battery Co.,** Philadelphia, Pa., has been appointed district manager of the North Atlantic district, with headquarters at 25 West Forty-third street, New York. **F. F. Sampson,** manager of the Exide depots and garages, succeeds Mr. Kellogg as manager of the New York branch, with **D. P. Orcutt** as assistant manager. The entire sales organization in New York City was recently consolidated and Mr. Sampson was appointed manager and Mr. Orcutt assistant manager.

Obituary

James B. Rider, vice-president and general manager of the Pressed Steel Car Company, died on November 3, at Pittsburgh, Pa., after an illness of four months.

Charles A. Lindstrom, assistant to the president of the Pressed Steel Car Company, died at his home in Pittsburgh, Pa., on September 2. Mr. Lindstrom was born in Sweden where he received his technical and engineering education. He came to this country in 1876, and shortly thereafter entered the employ of the Pennsylvania as draftsman and subsequently became chief draftsman. About 1900 he left Altoona to go to the Chicago & Alton as mechanical engineer. In May, 1902, he was appointed chief engineer of the Pressed Steel Car Company, and in May, 1913, was made assistant to the president of that company, which position he held at the time of his death. Mr. Lindstrom served in 1917, as a member of the sub-committee on Military Equipment Standard of the Special Committee on National Defense of the American Railway Association.

Railway Financial News

CENTRAL OF NEW JERSEY.—*Extends Time for Bids on L. & W. B. Coal Stock.*—The directors have extended until November 15 the time within which bids will be received for the purchase of the road's holdings of $8,849,000 Lehigh & Wilkes-Barre Coal Company stock. The following statement was given out after the meeting of the directors on Wednesday:

> The time within which proposals for the Central Railroad Company of New Jersey holdings in the stock of the Lehigh & Wilkes-Barre Coal Company will be received and considered was by action of the board of directors of the Central Railroad of New Jersey, extended to November 15, 1921, and in order that all proposals may be on a comparable basis and clearly within the provisions of the court decree, the committee, comprised of Messrs. Stotesbury, Willard and de Forest, have given notice that the proposals must be upon the basis of not less than 20 per cent payment in cash, the remainder in cash payable (in whole or in instalments) within a period of 11 months from the date of acceptance of any proposal.

CHESAPEAKE & OHIO.—*Authorized to Acquire Chesapeake & Ohio Northern.*—The Interstate Commerce Commission has issued an order approving and authorizing the proposed acquisition by the Chesapeake & Ohio of the railroad and property of the Chesapeake & Ohio Northern and also authorizing the Chesapeake & Ohio to assume the obligation of the Northern company to pay the principal of $1,000,000 of its first mortgage 5 per cent 30-year gold bonds and interest thereon.

CHICAGO, PEORIA & ST. LOUIS.—*Court Decision on Issuance of Receivers' Certificates.*—The appellate court for the Third district of Illinois on October 25 handed down a decision disapproving a receivers' certificate order made in an inferior state court on the ground that Interstate Commerce Commission approval was not made a necessary prerequisite of the issuance and sale of receivers' certificates. The receivers had been granted authority in the lower court to issue 335,000 receivers' additional certificates of indebtedness, due in one year with interest at 7 per cent. The appeal was brought by trustees of the first and second mortgage bonds who protested against the mortgage liens being made subordinate to the receivers' certificates.

The appellate court said in its decision:

> The order appealed from was an unconditional grant of authority to the receivers to issue and sell the certificates and did not require them to first obtain the approval and consent of the Interstate Commerce Commission, and, in so doing, was erroneous.
>
> The rules of the commission, however, require that there shall be filed with the application for authority to issue securities an opinion of counsel that the issue or assumption in respect to which authority is applied for under said section 20-a, is or will be legally authorized and valid if approved by the commission.
>
> This opinion of counsel must have some existing basis in fact, and the only valid basis for such an opinion in case like the present would be an order of the court authorizing the issuance and sale of the certificates provided such issuance and sale shall thereafter be authorized by the Interstate Commerce Commission in accordance with the provisions of said Section 20-a.
>
> The order is, therefore, reversed and remanded with directions to the circuit court to modify said order in conformity with the views expressed in this opinion.

DELTA SOUTHERN.—*Authorized to Abandon Lines.*—The Interstate Commerce Commission has issued a certificate authorizing this company to abandon three branch lines, in Mississippi, from Percy to Richey, 10.45 miles; from Elizabeth to Kergs Junction, and Angosta, 14.47 miles, and from Itta Bena to Belzoni, 27.19 miles.

HAWKINSVILLE & FLORIDA SOUTHERN.—*Authorized to Abandon Line.*—The Interstate Commerce Commission has issued a certificate authorizing the receiver to abandon the line of this company extending from Hawkinsville, Ga., to Worth, Ga., 42.32 miles, and from Ashburn to Camilla, Ga., 50.67 miles. The Georgia Railroad Commission has asked that the application be denied. The federal commission expressed the opinion that the receiver should first offer for sale the entire railroad as a going concern and if no satisfactory bid is received he should offer the road for sale in sections for continued operation. If no satisfactory bid is received then he should offer any unsold sections as scrap or junk. At competitive points opportunity should be afforded shippers and connecting carriers to purchase the spur tracks and other terminal facilities.

TENNESSEE, ALABAMA & GEORGIA.—*Application to Scrap.*—Executors of the Russell Sage Estate, owners of this road, filed an application in the Federal Court at Chattanooga, Tenn., on

October 28, for permission to scrap the line. The road has been a losing venture since its organization and has never paid interest on its bonds since their creation in 1911. It owns 88 miles of track, all in Alabama. The date of sale of the road was postponed three times, the next date being fixed as November 15.

TOLEDO, ST. LOUIS & WESTERN.—*Bond Suit Settled.*—J. S. Bache, chairman of the Stockholders' Protective Committee, announced on October 31 that the litigation involving the legality of the company's A and B bonds had been settled. A report of the committee was mailed to the depositors under the protective agreement.

Mr. Bache's statement outlining the settlement was as follows:

The litigation involving the Toledo, St. Louis & Western Railroad Company, commonly called the "Clover Leaf," has been pending for seven years in the United States District Court at Toledo.

The controversy in the litigation was with reference to the legality of $11,527,000 par value of what are known as the A and B bonds issued by the Clover Leaf in payment for the controlling stock of the Chicago & Alton Company acquired by the Clover Leaf in the year 1907.

The bonds were contested by the stockholders' protective committee on the grounds, first, that the bonds were given for the purchase of the controlling stock of a competing road, and, second, that fraud was practiced by the parties concerned in the transaction, so that all of the bonds were tainted. A very large amount of testimony was taken and this testimony was filed in the court in August last.

A settlement has been effected which results in the surrender and cancellation of the entire issue of A and B bonds with all of the interest coupons.

The A and B bondholders take back all of the Chicago & Alton stock and the Clover Leaf pays in cash $1,130,000 to the bondholders' committee, and the stockholders turn over to the bondholders' committee 10 per cent of the common and preferred stock of the Clover Leaf. The total stock of the Clover Leaf outstanding is $10,000,000 of common and $10,000,000 of preferred.

The result of the transaction is that the property is restored to the Clover Leaf stockholders free of A and B bonds which at this time with interest amount to practically $16,000,000. The only funded indebtedness against the Clover Leaf is $10,000,000 of prior lien 3½ per cent bonds and $6,500,000 4 per cent bonds, making a total mortgage indebtedness of $16,500,000. This funded debt is the only debt of the Clover Leaf excepting equipment trust obligations which are being paid out of the current earnings, and receivers' indebtedness of approximately $1,000,000 which it is expected will be paid from the sale of some treasury assets or from the operations of the property.

The settlement leaves the company in substantially the same financial condition that it was prior to its unfortunate purchase of the Chicago & Alton stock and the physical condition of the property has been greatly improved during the receivership.

UTAH RAILWAY.—*Asks Authority to Acquire Utah Terminal Railway.*—This company has applied to the Interstate Commerce Commission for authority to acquire by lease the property of the Utah Terminal Railway.

Treasury Payments to Railroads

The United States Treasury Department announces the payment of a loan of $50,000 to the Norfolk Southern from the revolving fund on a certificate of the Interstate Commerce Commission. A total of $21,105,033 loaned to 12 railroads from the revolving fund has been repaid by the companies.

Dividends Declared

Cleveland & Pittsburgh.—Guaranteed, $.87½, quarterly; special guaranteed, $.50; both payable December 1 to holders of record November 10.

Elmira & Williamsport.—Common, 2.26 per cent, payable November 1 to holders of record October 20.

Nashua & Lowell.—4½ per cent, payable November 1 to holders of record October 15.

UPON THE COMPLETION of a timber treating plant at New Haven, Conn., the New York, New Haven & Hartford will take up extensively the use of treated cross-ties, switch ties, lumber and piling. The plant which is to be provided by the American Creosoting Company, New York, will be erected adjacent to the north end of the Cedar Hill freight terminal, will form a part of it and have a capacity of 1,500,000 ties annually. The tie requirements of the New Haven in the past have averaged about 2,000,000 annually but with the disappearance of chestnut and other desirable woods, the annual needs were tending to increase to about 3,000,000. Heretofore, it has been necessary to ship ties and timber which were produced locally and which it was desired to treat, to distant points for that treatment. With the inauguration of a treating plant at New Haven it will become possible to utilize many of the cheaper grades of timber now easily available locally with the result that it probably will not be necessary to ship in any ties from outside territories.

Railway Officers

Executive

J. M. Herbert, president of the St. Louis-Southwestern, has also been elected president of the Dallas Terminal Railway & Union Depot Company, with headquarters at Dallas, Tex.

H. B. Hull, general claim agent of the Illinois Central, with headquarters at Chicago, has been promoted to assistant to the president with the same headquarters. Mr. Hull was born on March 11, 1870, at Chamois, Mo. He entered railroad service in 1895 in the passenger traffic department of the Chicago, Burlington & Quincy, with headquarters at St. Louis, Mo. On November 1, 1898, he left that road to become claim agent of the Louisiana division of the Illinois Central, with headquarters at McComb, Miss., and four years later he was transferred to the Springfield division, with headquarters at Springfield, Illinois. On August 1, 1904, he was promoted to district claim agent, with headquarters at Memphis, Tenn., which position he held until May 1, 1909, when he was promoted to assistant chief claim agent of lines South of the Ohio River and the Yazoo & Mississippi Valley, with the same headquarters. On July 1, 1911, he was transferred to Chicago and placed in charge of claims on the Northern lines. On March 13, 1913, he was made chief claim agent of the entire system, which position he was holding at the time of his recent promotion.

H. B. Hull

Financial, Legal and Accounting

W. E. Fitzgerald, whose appointment as auditor of the San Antonio & Aransas Pass, with headquarters at San Antonio, Tex., was announced in the *Railway Age* of September 24 (page 600), was born at New Orleans, La., on June 11, 1870. He entered railroad service with the Galveston, Harrisburg & San Antonio on June 1, 1885 and remained with that company until October 1 of the same year, when he left to become a clerk in the Southern Pacific's office at New Orleans. On October 1, 1890, he entered the service of the San Antonio & Aransas Pass as a clerk in the general offices at San Antonio. He was appointed chief clerk in charge of disbursements of the Houston & Texas Central on October 1, 1894, and held this position until June, 1909, when he was appointed auditor of the Railroad Commission of Texas. In June, 1920, he was appointed assistant auditor of the San Antonio & Aransas Pass, which position he was holding at the time of his recent promotion.

Traffic

W. I. Chudleigh has been appointed import freight agent of the Canadian Pacific; the Duluth, South Shore & Atlantic, and the Minneapolis, St. Paul & Sault Ste Marie, with headquarters at Chicago.

J. T. Wray, division freight agent of the Pennsylvania, with headquarters at Erie, Pa., has been transferred to Louisville, Ky., succeeding **F. G. Maus,** who has been transferred

to the Central region, with headquarters at Cleveland, Ohio. **G. Berg** will succeed Mr. Wray at Erie.

F. L. Hanna has been appointed assistant general freight and passenger agent of the Atchison, Topeka & Santa Fe with headquarters at Phoenix, Ariz., succeeding F. P. Cruice, assigned to other duties. **N. H. Asp** has succeeded Mr. Hanna as division freight and passenger agent with headquarters at Fresno, Cal. **W. J. Shattuck** has been appointed division freight agent with headquarters at Oakland, Cal., succeeding Mr. Asp. These changes were effective November 1.

A. S. Edmonds, whose appointment as traffic manager of the Oregon-Washington Railroad & Navigation Company, with headquarters at Portland, Ore., was announced in the *Railway Age* of September 24 (page 600), was born at Louisville, Ky., on July 7, 1881. He entered railroad service in July, 1899, as a messenger boy on the Southern at Louisville and until 1903 served successively as correspondence clerk, assistant rate clerk, rate clerk, and assistant chief rate clerk. He left the Southern in September, 1903, to become traveling freight agent of the Mallory Steamship Company, with headquarters at Atlanta, Ga. He re-entered railroad service in June, 1908, as general agent of the Missouri Pacific, with headquarters at Birmingham, Ala. In February, 1911, he was transferred to Philadelphia, Pa., where he remained until May, 1915, when he left the Missouri Pacific to become traffic manager of the Chesapeake Steamship Company, with headquarters at Baltimore, Md. He returned to the Missouri Pacific in July, 1917, as assistant freight traffic manager, with headquarters at St. Louis, Mo., which position he held until August, 1918, when he was appointed assistant chief of the inland traffic service of the war department at Atlanta, Ga. From January, 1919, to March, 1920, he was an assistant in the division of traffic of the Railroad Administration, with headquarters at Washington, D. C. On March 1, 1920, he was appointed general traffic manager of the Los Angeles & Salt Lake, which position he held at the time of his recent appointment.

Operating

J. O. Jones has been appointed supervising agent of the Bessemer & Lake Erie. He will exercise supervision over all employees in station and transfer service.

Mechanical

A. H. Powell has been appointed superintendent of the Jeffery Shops of the Western Pacific, with headquarters at Sacramento, California, effective November 1.

C. M. Hatch has been appointed mechanical engineer of the Missouri, Kansas & Texas with headquarters at Parsons, Kansas, succeeding W. H. Maddocks, retired, effective October 1.

F. M. Mozley, roundhouse foreman of the Gulf, Colorado & Santa Fe at Gainesville, Tex., has been appointed master mechanic of the Southern division with headquarters at Temple, Tex.

M. B. McPartland has been appointed superintendent of motive power of the Western Pacific with headquarters at Sacramento, California, and the position of general master mechanic has been abolished. These changes were effective November 1.

L. E. Fletcher has been appointed acting master mechanic of the New Mexico division of the Atchison, Topeka & Santa Fe with headquarters at Raton, N. M., succeeding T. T. Ryan, who has been granted a leave of absence on account of illness.

J. McKenzie has been appointed shop superintendent of the Pere Marquette at Ionia, Mich., succeeding J. Speckin, assigned to other duties. **W. F. Crowder** has succeeded Mr. McKenzie as general car inspector. These changes were effective November 1.

C. E. Brooks, traveling engineer of the Chicago, Milwaukee & St. Paul, with headquarters at Miles City, Mont., has been promoted to master mechanic of the Bellingham division, with headquarters at Bellingham, Wash., succeeding C. E. Cessford, assigned to other duties on account of ill health. **W. M. Anderson** has been appointed master mechanic of the Northern Montana division, with headquarters at Lewistown, Mont., succeeding O. A. Coltrin, who has been assigned to other duties.

Engineering, Maintenance of Way and Signaling

Z. A. Green has been appointed division engineer of the Gulf, Colorado & Santa Fe with headquarters at Galveston, Tex., succeeding **W. W. Wilson,** who has been transferred to the Southern division with headquarters at Temple, Texas.

K. F. Wakeman, assistant supervisor of the Toledo signal district of the New York Central, Western Lines, with headquarters at Toledo, Ohio, has been promoted to signal supervisor of the Franklin signal district, with headquarters at Ashtabula, Ohio.

A. Craine, whose appointment as district engineer, maintenance of way, of Missouri district of the Chicago, Burlington & Quincy, was announced in the *Railway Age* of October 15 (page 774), was born in England in 1883. He entered railroad service in 1905, as a rodman on the Missouri Pacific. In 1908, he left to become a rodman on the Chicago, Burlington & Quincy and, through various promotions, he became division engineer, with headquarters at St. Joseph, Mo., which position he was holding at the time of his recent appointment.

Purchasing and Stores

A. Ross has been appointed division storekeeper of the Erie with headquarters at Jersey City, N. J., and **M. H. Keyes** has been appointed to a similar position with headquarters at Buffalo, N. Y., effective October 1.

Obituary

L. F. Timmerman, secretary and treasurer of the Western Maryland, died on October 31 at Paris, France.

D. J. McCoy, formerly resident engineer of the Atchison, Topeka & Santa Fe at Willard, N. M., died recently at Los Angeles, Cal.

A. Jackson, agricultural agent of the Chicago, Rock Island & Pacific, with headquarters at Chicago, died at his home in that city on October 30.

Charles E. Oakes, shop superintendent of the Kansas City Southern, with headquarters at Pittsburg, Kansas, died on October 13, as a result of injuries received in an automobile accident on October 8.

Frank T. Dolan, formerly general superintendent of the Southwestern district of the Chicago, Rock Island and Pacific, with headquarters at Topeka, Kansas, died at his home in that city on October 25. Mr. Dolan was born in Illinois in 1867 and entered railroad service in 1882 as an agent with the Chicago, Burlington & Quincy. In 1884, he entered the employ of the Atchison, Topeka & Santa Fe as a dispatcher, which position he held for six years. From 1890 to 1892 he was chief dispatcher of the Union Pacific, and from 1892 to 1897, chief dispatcher and train master of the Atchison, Topeka & Santa Fe. From the later date until 1903, he was superintendent of different divisions of that road, and from August 1, 1903, to August 1, 1905, he was general superintendent of the Colorado & Southern and the Fort Worth & Denver City, resigning to become general superintendent of the Southwestern district of the Chicago, Rock Island & Pacific. He was granted an indefinite leave of absence, due to ill health, on Sept. 10, 1906, and since that time he has been inactive in railroad work.